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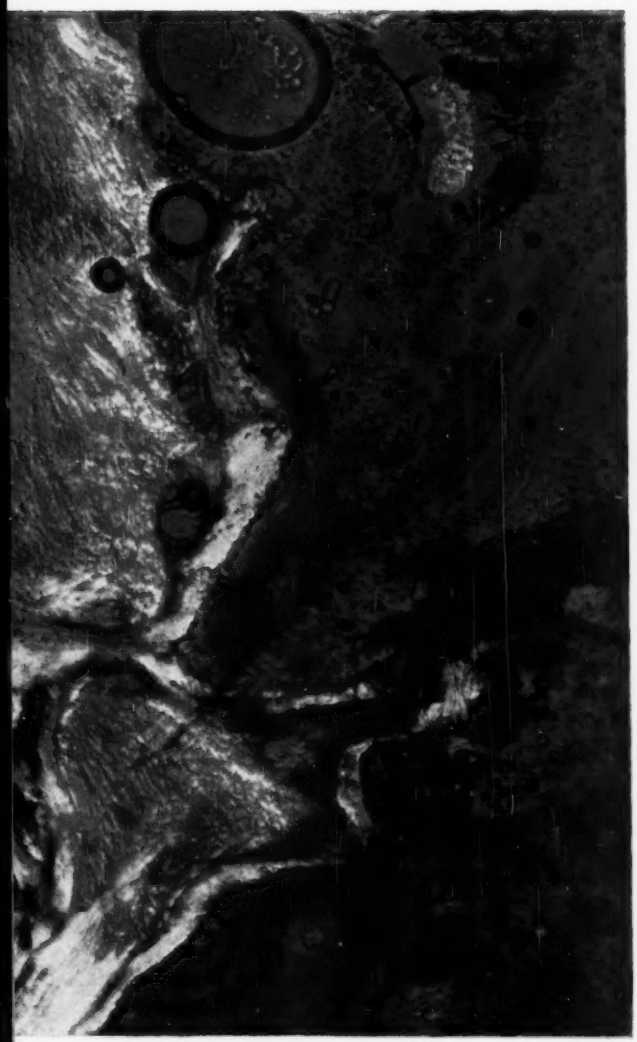
Chemical Week



Labor trouble brewing? Steel, glass and oil are the industries to watch . . . . . p. 21

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Chicago's new pollution law —it could be a model for other big cities . . . . . p. 80

February 14, 1959

STEVENS RICE G
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Our enjoyment of candy and tobacco would soon disappear if it were not for the invisible magnet that holds their moisture—glycerine.

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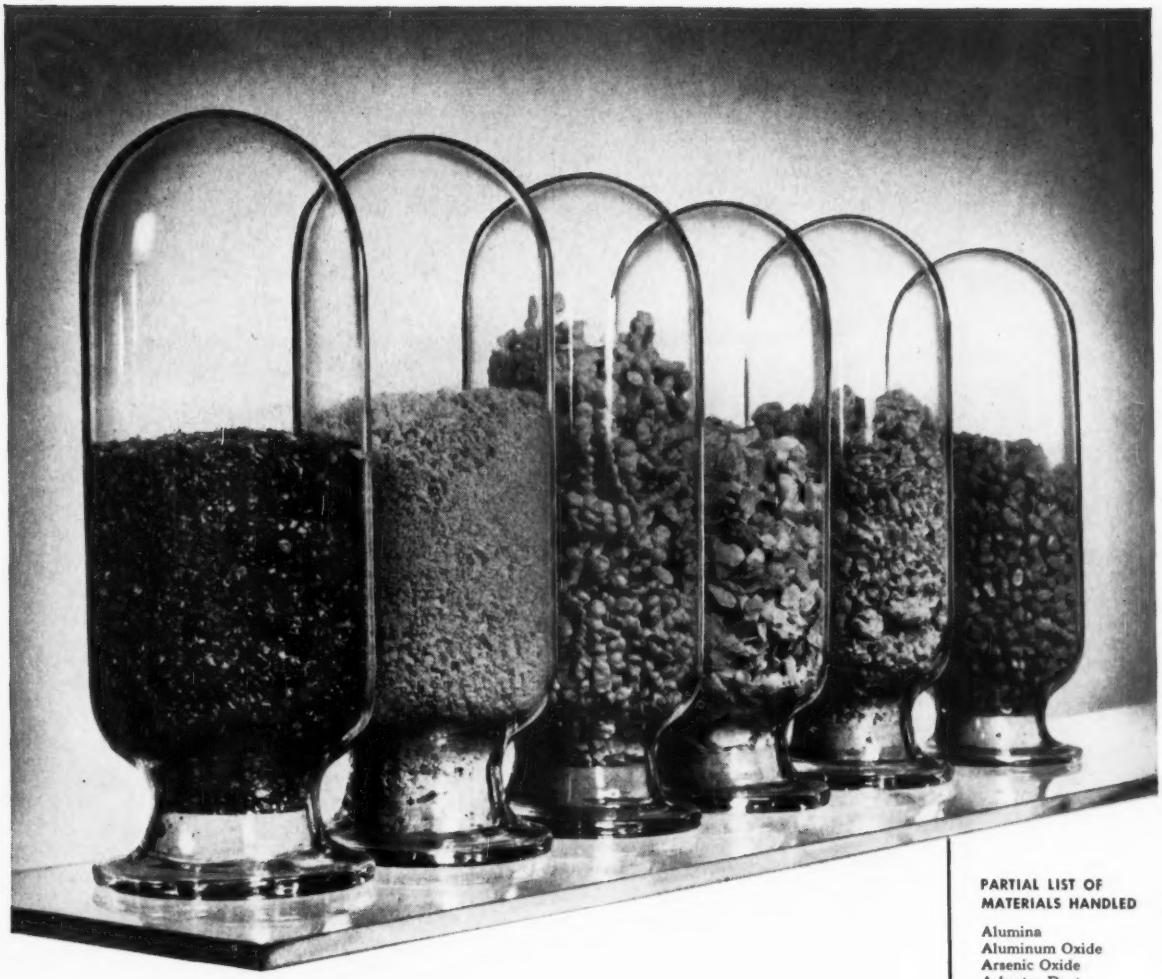

PARTIAL LIST OF MATERIALS HANDLED

Alumina
Aluminum Oxide
Arsenic Oxide
Asbestos Dust
Barite
Bauxite
Bentonite
Borax
Calcium Carbonate
Carbon Black
Catalysts, Petroleum
Cement, Portland
Cement Raw Material
Chalk
Clays
Coal, pulverized
Detergent Powders
Diatomaceous Earth
Feeds, soft
Fertilizers
Flour
Flue Dusts
Fly Ash
Gypsum (raw or calcined)
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Phosphate Rock, pulverized
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Starches
Sugars, refined
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Chemical Week

TOP OF THE WEEK FEBRUARY 14, 1959

- **Profit margins return to '56 levels,** as strong fourth quarter buoys chemical companies' sales and earnings .....**p. 23**
- **Pipelines, new chemicals, foreign terminals**—they're key to American Mineral Spirits Co.'s expansion plan .....**p. 38**
- **Consumer-testing magazine reports can affect your business,** but not quite in the way you'd imagine .....**p. 47**
- **Nuclear fuel-reprocessing may become more attractive** if radioisotopes find use in power generation.....**p. 55**
- **Target: a tougher plastic interlayer for use in safety glass?** Potential reward: greater glass demand by auto makers..**p. 68**

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17 BUSINESS NEWSLETTER

21 Year of labor trouble ahead? Industry-wide bargaining in several process industries may set pattern for chemical wage increases.

22 Future chemical plant sites may be at stake as AEC seeks suitable "burial grounds" for radioactive wastes.

23 Sharp upswing in chemical companies' fourth-quarter earnings brings profit margins back up to '56 level.

23 Hercules and Stauffer form joint subsidiary to produce Ziegler-process aluminum alkyls.

24 Titanium pigment news: Du Pont begins operation of new plant; three firms search for new ore supplies.

24 Commercial Solvents integrates vertically, buys natural gas source for part of its Louisiana feedstock requirements.

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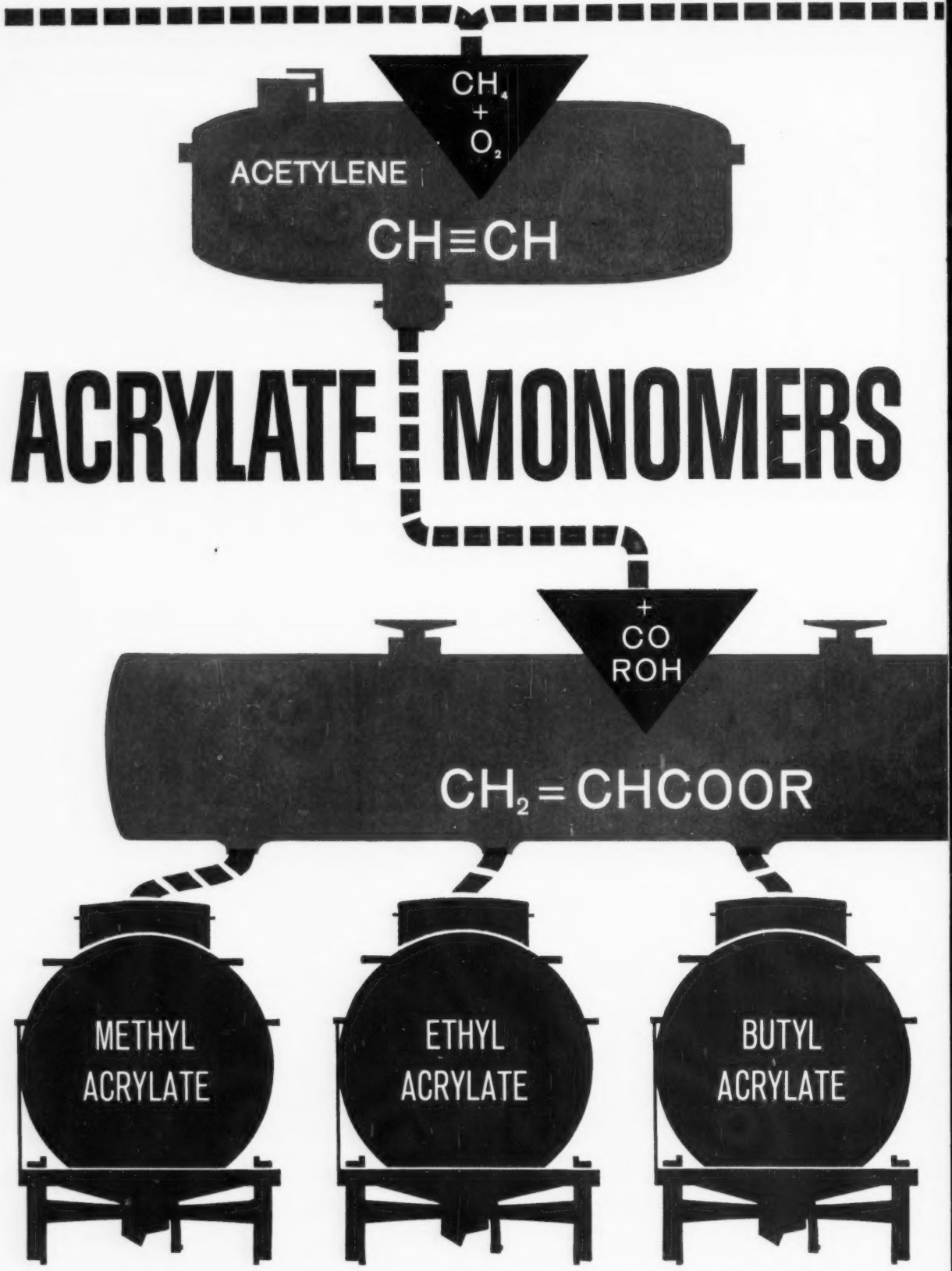
42,454 copies of this issue printed

Vol. 84
No. 7

Chemical Week is published weekly by McGraw-Hill Publishing Co., Inc., 330 W. 42nd St. New York, 36, N. Y. Place of publication: 3rd and Hunting Park Ave., Philadelphia 40, Pa. Second-class postage paid at Philadelphia. Subscription: $3/year in U.S.A. Send subscription correspondence and change of address to Fulfillment Manager, Chemical Week. Please see page 10 for subscription requirements.

Postmaster: Please send Form 3579 to Chemical Week, 330 West 42nd St., New York 36, N. Y.


NATURAL GAS
LIQUID AIR
CH_4
+
O_2
ACETYLENE
$CH \equiv CH$
ACRYLATE MONOMERS
+
CO
ROH
$CH_2 = CHCOOR$
METHYL ACRYLATE
ETHYL ACRYLATE
BUTYL ACRYLATE

methyl acrylate
ethyl acrylate
butyl acrylate
2-ethylhexyl acrylate
methyl methacrylate
ethyl methacrylate
glacial acrylic acid

butyl methacrylate
hexyl methacrylate
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*U.S. Patents 2,740,689 and 2,820,690

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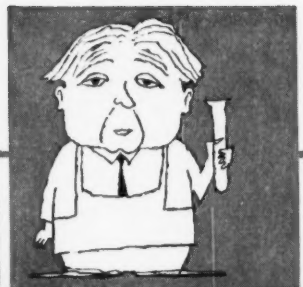

What's a PEROXYGEN?

Fact is, "peroxygen" is a word that Becco uses to indicate that we can tie oxygen onto just about anything.

How come? Well, years of experience in producing Hydrogen Peroxide has produced an affinity between Becco and oxygen — an affinity we have capitalized on to give you compounds that will provide a ready source of oxygen — wherever, however and whenever you need it.

We have a good number of such compounds on the shelves. Quite a few others are in development. Still others are merely in our minds, but we can begin drawing them out if you're interested.

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What's new in Metal Treatments and Etching?

Quite a few things. For example, there's the use of Becco Ammonium Persulfate in etching printed circuits. Seems the material works a lot better – at less cost – and with none of the hazards of the ferric chloride solutions conventionally used.

Then, there's the problem of pickling copper and brass. Lots of pickling agents will do this – only trouble is, you've got to paint or plate or do whatever you're going to do with the metal rather quickly. Or else. Or else it will tarnish or oxidize and you're in the pickle all over again.

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We hope so. What's more, we've got several booklets to help spur you on. They're free—use the coupon below to order.

No. 39 and 51—Surface Treatment of Metals with Peroxygen Compounds.

No. 86 – Improving Properties of Copper and Brass Surfaces.

No. 97 – Paddle Etching of Printed Circuits with Ammonium Persulfate.

No. 99 – Tank Immersion Etching of Printed Circuits with Ammonium Persulfate.

No. 102—Etching of Printed Circuits with Mercury Activated Persulfate.

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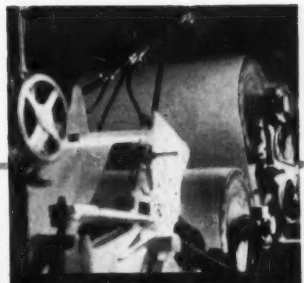

How BRIGHT Is BRIGHT?

That's a hard question to answer. It depends on how the pulp is treated.

Trouble is, paper can show an 86 level at the layboy, but by the time the paper is delivered, this has dropped to 82 or lower. With conventional bleaching methods, that is.

Many chemical pulp producers have found the answer to this problem in Becco's Dryer Steep Bleaching Process (patented, but licensed perpetually for one buck). Applied by means of spray pipes across the pulp sheet ahead of the dryers, Becco Hydrogen Peroxide increases brightness permanence and bleaches in transit. Often, in fact, an 86 layboy level improves to 88 by delivery time.

This is just one example. Becco has a vast amount of technical knowledge compiled from 31 years of experience with all types of pulp. If you'd like help with your pulp, free of any obligation, let us know with the coupon below.

BECCO fmc

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We would like help with our pulp. Please have a Becco Sales Engineer call.

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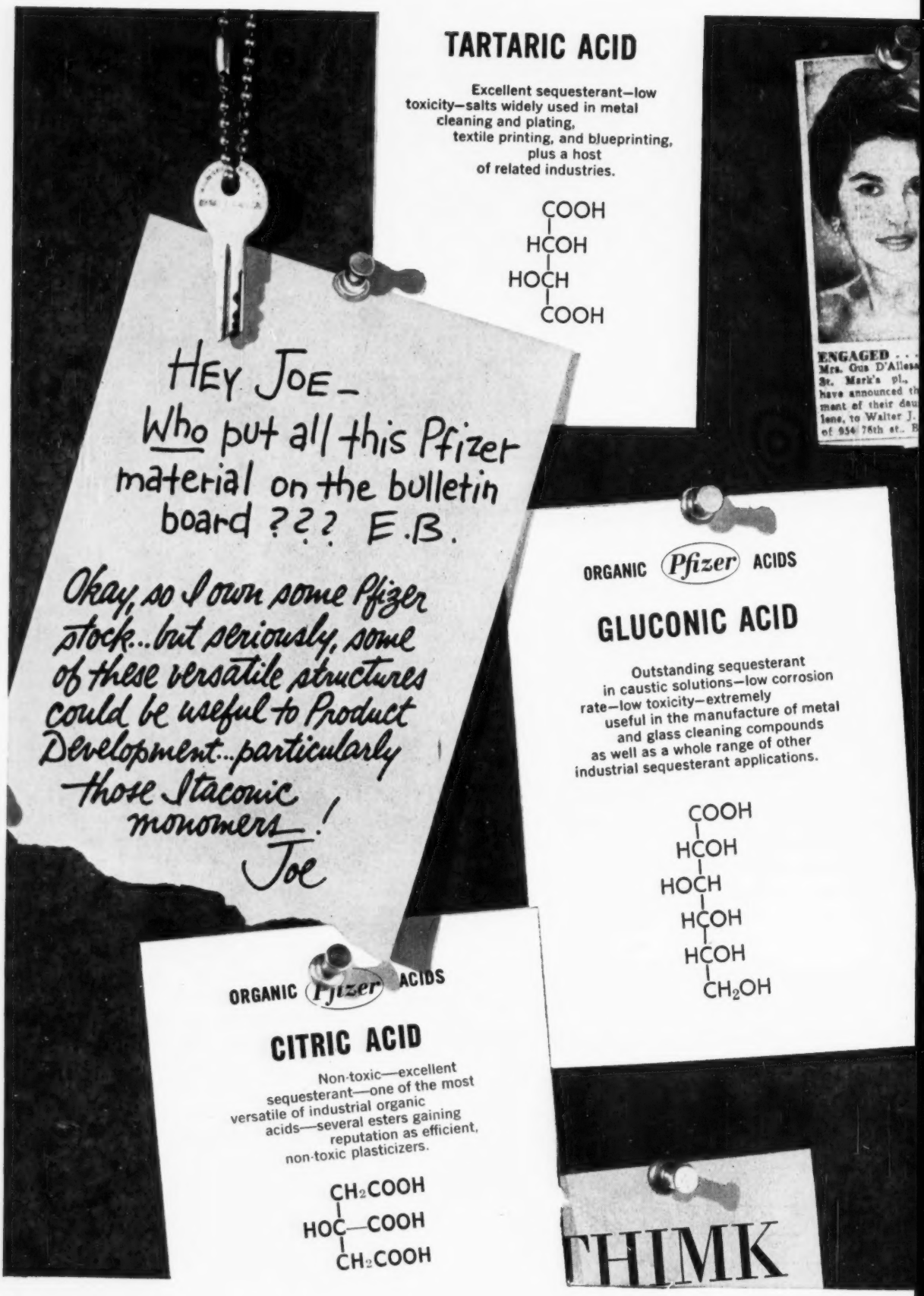
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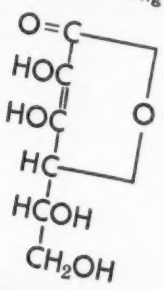

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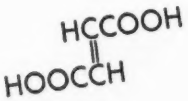

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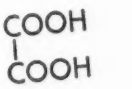

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FEBRUARY 14, 1959 **Vol. 84, No. 7**

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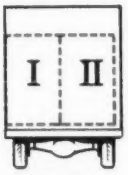

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PUBLISHER'S PAGE

YOU HAVE A VESTED INTEREST in the material that appears below. As a reader of CHEMICAL WEEK, you've probably read the ads reproduced here, which appeared in CW's Dec. 13 issue. And more significant: if you're a typical reader, you've done something about the advertising.

This week is National Advertising Week—during which we in publishing take some extra time to think over how we can make our magazine more effective for you, both in its editorial and its advertising pages. One way we gauge this is with "Reader Feedback" surveys. Several times each year, trained interviewers in all parts of the U.S. go out and talk to a statistically selected sample of readers. They ask what advertising and editorial matter you read. They ask you which ad was the most interesting and—more important—what action you took after reading it. The "verbatims" below are a few such examples.

Marion F. Brandly

Publisher

"Thermal shock is always one of the problems with glass-lined equipment; and this ad shows the development of improved materials with increased shock resistance. We have been in touch with Pfaudler's local representative."

Manager, chemical production
Coal chemicals company
Pittsburgh, Pa.

"We use chlorinated trisodium phosphate in compounding dishwashing detergents. We purchase it from Monsanto, but I see by this ad that Victor is a possible additional source, as its material is equivalent, quality-wise. I will notify our purchasing agent of our probable use of this source. The salesman for the company calls on us regularly."

Technical director
Cleaning compounds manufacturer
Detroit, Mich.

"The advertisement is of interest to us, since a great many of the raw materials we buy come in paper bags, and there is some breakage. If there were more of a problem, I would show this to some of our suppliers—though I'm sure they are aware of it."

Vice-president
Mechanical rubber goods manufacturer
Minneapolis, Minn.

"Plant locations and warehouse facilities are something that everybody is interested in, whether you buy something from them or whether they're competitors. Being in sales, as I am, customers often ask if I can get them a certain material that I don't supply. I have to be able to accommodate them with service, you see. If you have such background information, you can pick a source and recommend it to the customer."

Technical sales representative
Solvents and organic chemical manufacturer
Newark, N.J.

"We're a competitor of Wyandotte's. I was interested in the firm's over-all expansion program and plant locations to see how we compete on delivery costs. I've discussed this ad with our salesmen to see if we have a way of meeting them on price quotations."

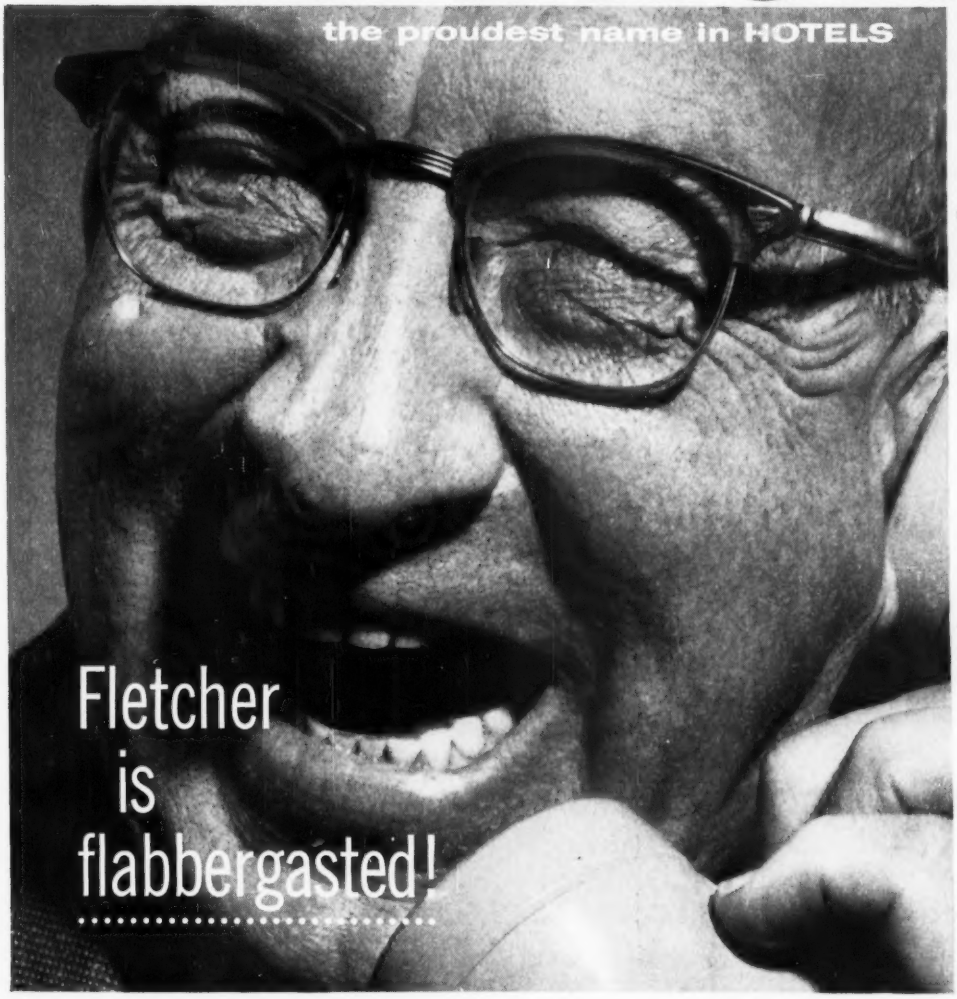
Detroit, Mich., district office manager
Diversified chemical producer

"I was attracted to this company and its swing check valve, which permits liquid to flow in one direction only. We are using a standard gate valve now, but we are looking for a way to improve the flow of liquid. I had one of my local suppliers that handles that line see if Powell manufactures that valve in a material that would be feasible for our product."

Vice-president and treasurer
Soap company
Newark, N.J.

SHERATON

the proudest name in HOTELS



Which of these 39 cities is your next stop?

EAST
NEW YORK
BOSTON
WASHINGTON
PITTSBURGH
BALTIMORE
PHILADELPHIA
PROVIDENCE
ATLANTIC CITY
SPRINGFIELD, Mass.
ALBANY
ROCHESTER
BUFFALO
SYRACUSE
BINGHAMTON, N.Y.
(opens early 1959)

MIDWEST
CHICAGO
DETROIT
CLEVELAND
CINCINNATI
ST. LOUIS
OMAHA
AKRON
INDIANAPOLIS
FRENCH LICK, Ind.
RAPID CITY, S. D.
SIOUX CITY, Iowa
SIOUX FALLS, S. D.
CEDAR RAPIDS, Iowa

SOUTH
LOUISVILLE
DALLAS
(opens early 1959)
AUSTIN
MOBILE

WEST COAST
SAN FRANCISCO
LOS ANGELES
PASADENA
PORTLAND, Oregon
(opens fall 1959)

CANADA
MONTREAL
TORONTO
NIAGARA FALLS, Ont.
HAMILTON, Ont.

. . . Sheraton's ***RESERVATRON*** got him his hotel reservation in just 4 seconds!

A call to the nearest Sheraton Hotel sets in motion the world's fastest hotel reservation service. ***RESERVATRON,*** new electronic marvel, reserves and confirms your room in any Sheraton Hotel coast to coast in split seconds! For hotel reservations for your next trip, just phone Sheraton. Let ***RESERVATRON*** take it from there.

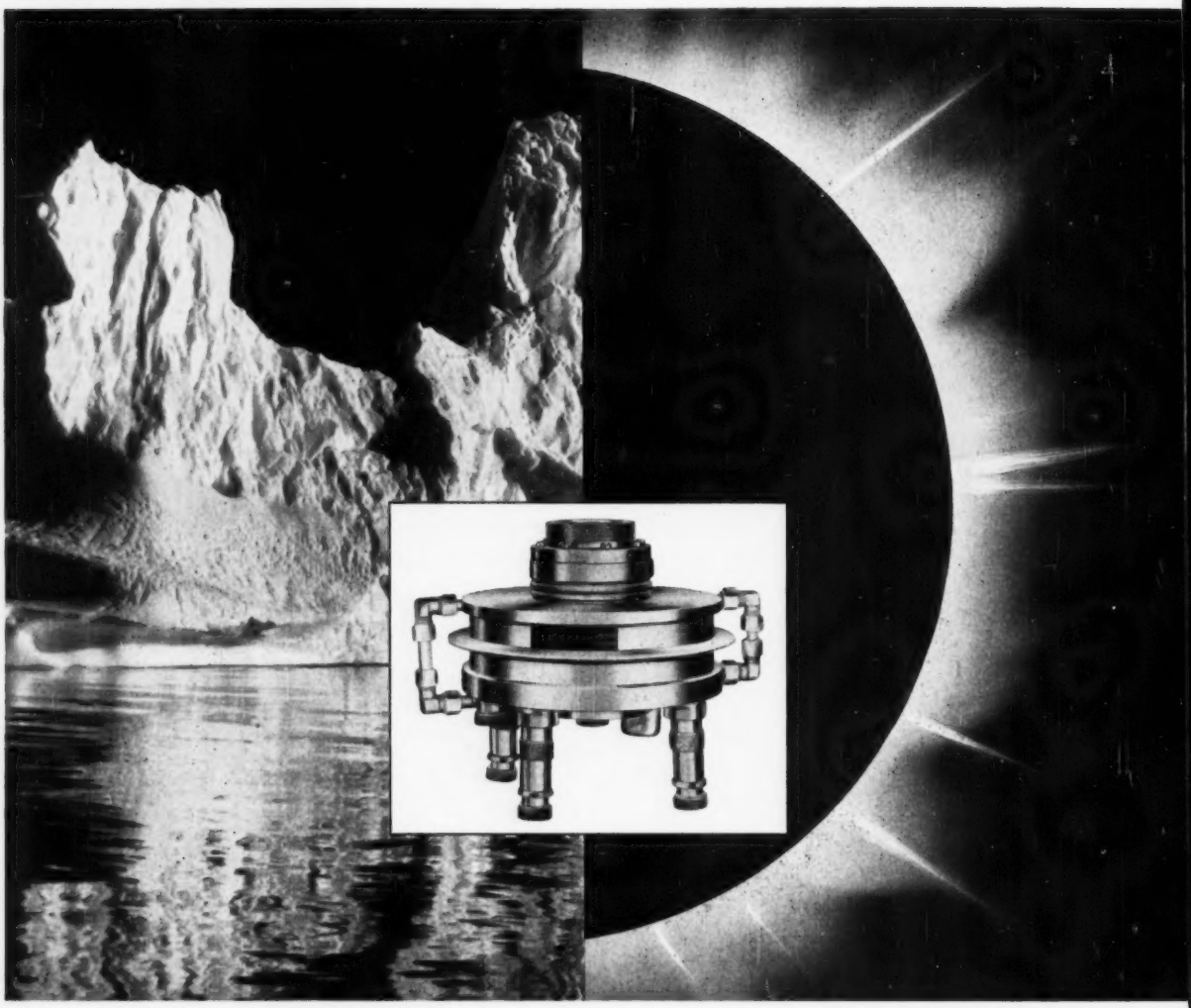
FREE BOOKLET to help you plan trips, sales and business meetings, conventions. 96 pages, describing Sheraton facilities in 39 major cities. **MEMBERSHIP APPLICATION** for the Sheraton Hotel Division of the DINERS' CLUB. This card is an invaluable convenience for the traveler — honored for all Sheraton Hotel services.

Just send us this coupon —

Sheraton Hotels, Dept. 14, 470 Atlantic Ave., Boston 10, Mass.
Please send me, without obligation: ☐ Sheraton facilities booklet
☐ Membership application for the Sheraton Hotel Division of the Diners' Club
Name .....
Address .....
City ..... *Zone* ..... *State* .....

3M COMPANY CHEMICALS

THE RAW MATERIALS OF PROGRESS



FLUOROCHEMICALS, STABLE BELOW 0°

When extremes are the norm, inert fluids tame many problems. Fluorochemical FC 75, a 3M inert fluid, was specified for use in cooling the RCA transmitting tube shown above—a beam power tube capable of delivering a useful cw power output of 25 kw at 400 Mc. FC 75 permitted design of the tube for operation at temperatures below 32°F. with essentially the same power output as that obtained with water cooling at temperatures above 32°F. The most stable fluid ever developed, the properties of FC 75 have outstanding value in electronics, where it serves as a coolant and insulating fluid. Even under extended use at high voltage FC 75 maintains high dielectric strength. It has wide liquid range, from —148°F. to 212°F., with low viscosity. Nontoxic, non-flammable, it is thermally stable in excess of 800°F. Get all the facts about this "do nothing" chemical. See what FC 75 can do for you.

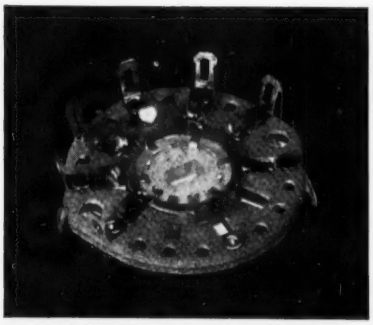
CHEMICAL DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY

. . . WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

CUTS CORONA CRACKING Furatone NC-1008, added to neoprene compound ignition cable jackets made by Belden Manufacturing Company, almost eliminates corona cracking, as seen in this comparison of two types of jackets. The new Furatone NC-1008 compound cuts raw materials cost by as much as 8%, reduces scrap waste by 50%, improves processing.



ROTARY SWITCH SIZE REDUCED! Plastic rotors, made by Oak Manufacturing Company of KEL-F® halofluorocarbon, made possible the development of a smaller rotary switch only $1\frac{3}{32}$" in diameter. The zero moisture absorption, high dielectric strength, low co-efficient of friction of the KEL-F rotor aided in miniaturization. KEL-F is chemically inert, resists thermal shock, has high impact strength.

or at 800° F.

See what 3M Chemicals can do for you! For free literature, write on your company letterhead, specifying product interest, to 3M Chemical Division, Dept. WE-29, St. Paul 6, Minnesota.

3M CHEMICAL DIVISION, MANUFACTURERS OF: Acids • Resins • Elastomers • Plastics • Oils, Waxes and Greases • Dispersion Coatings • Functional Fluorochemicals • Inert Liquids and Surfactants.

OPINION

Is Tetracycline Necessary?

TO THE EDITOR: Your lead article *(Jan. 17)* on FTC's antibiotics patent and pricing case against five pharmaceutical companies should not be to determine to whom the patent on tetracycline should have been issued and why, but whether this broad-spectrum antibiotic is needed by the human or animal race to combat diseases for which Chloromycetin, Aureomycin and Terramycin already have served adequately. In short, the question is whether there are enough alleged advantages in the treatment of pneumonias, whooping cough, brucellosis and the rickettsial diseases to justify the existence and production of tetracycline and its sale to doctors and veterinarians who have long been successfully using chlortetracycline (Aureomycin) to combat streptococci, staphylococci and corynebacterium progenes organisms in cattle and to treat leptospirosis in dogs.

DR. ERWIN P. ZEISLER
Winnetka, Ill.

Basis for Boranes

TO THE EDITOR: I deeply appreciate the generous comments expressed in your Technology Newsletter of Jan. 10. However, I feel that you are doing an injustice to the Olin Mathieson and Callery organizations. Permit me to clarify the situation.

In the course of our researches for the government at the University of Chicago during 1940-43, Professor Schlesinger and I, with the aid of our capable co-workers, uncovered the alkali metal hydride route to diborane and the alkali metal borohydrides *(Journal of the ACS, 76, 188-244, 1953)*. These discoveries were the subject of a number of patents (with Professor Schlesinger and myself as co-inventors) largely assigned to the government. More recently, at Purdue, my students and I have been studying the effect of metal salts and of substituents on the reducing power of borohydrides.

Since the processes utilized by Olin Mathieson and Callery have not been disclosed, it is not possible to say to what extent our observations may be correlated with the reactions used in their processes. However, I am confident that any improvement these organizations have introduced into the alkali metal hydride route to diborane must be the result of discoveries and developments within their respective research organizations and not related to our own investigations of the factors influencing the reducing power of the alkali metal borohydrides toward organic compounds.

HERBERT C. BROWN
Dept. of Chemistry
Purdue University
Lafayette, Ind.

CW thanks Reader Brown for his comments. While we did not intend to discount the efforts made by Olin Mathieson and Callery, we feel that Dr. Brown may be unduly modest.—ED.

MEETINGS

American Institute of Mining, Metallurgical and Petroleum Engineers, annual meeting, San Francisco, Feb. 15-19.

Chemical Market Research Assn., meeting; theme: chemicals for the textile industry; Dinkler Plaza Hotel, Atlanta, Feb. 18-19.

National Chemical Credit Assn., sixth annual meeting, Sheraton Hotel, Philadelphia, Feb. 18, 19, 20.

Chemical Institute of Canada, Protective Coatings Subject Division, Toronto, Feb. 19; Montreal, Feb. 20.

Technical Assn. of the Pulp and Paper Industry, 44th annual meeting, Commodore Hotel, New York, Feb. 23-26.

American Pulp and Paper Assn., 82nd annual paper week. Waldorf-Astoria Hotel, New York, Feb. 26.

Commercial Chemical Development Assn., annual New York meeting; theme: diversification in the chemical industry; Statler Hotel, New York, March 4-5.

International Acetylene Assn., annual convention, Roosevelt Hotel, New Orleans, March 9-10.

Assn. of Consulting Chemists and Chemical Engineers, panel of six experts in open discussion; subject: Selling Professional Services; Shelburne Hotel, New York, March 10.

American Institute of Chemical Engineers and **American Chemical Society,** sixth annual joint technical meeting, King Edward Hotel, Beaumont, Tex., March 13.

Assn. of Corrosion Engineers, 1959 Corrosion Show and 15th annual national conference, Sherman Hotel, Chicago, March 16-20.

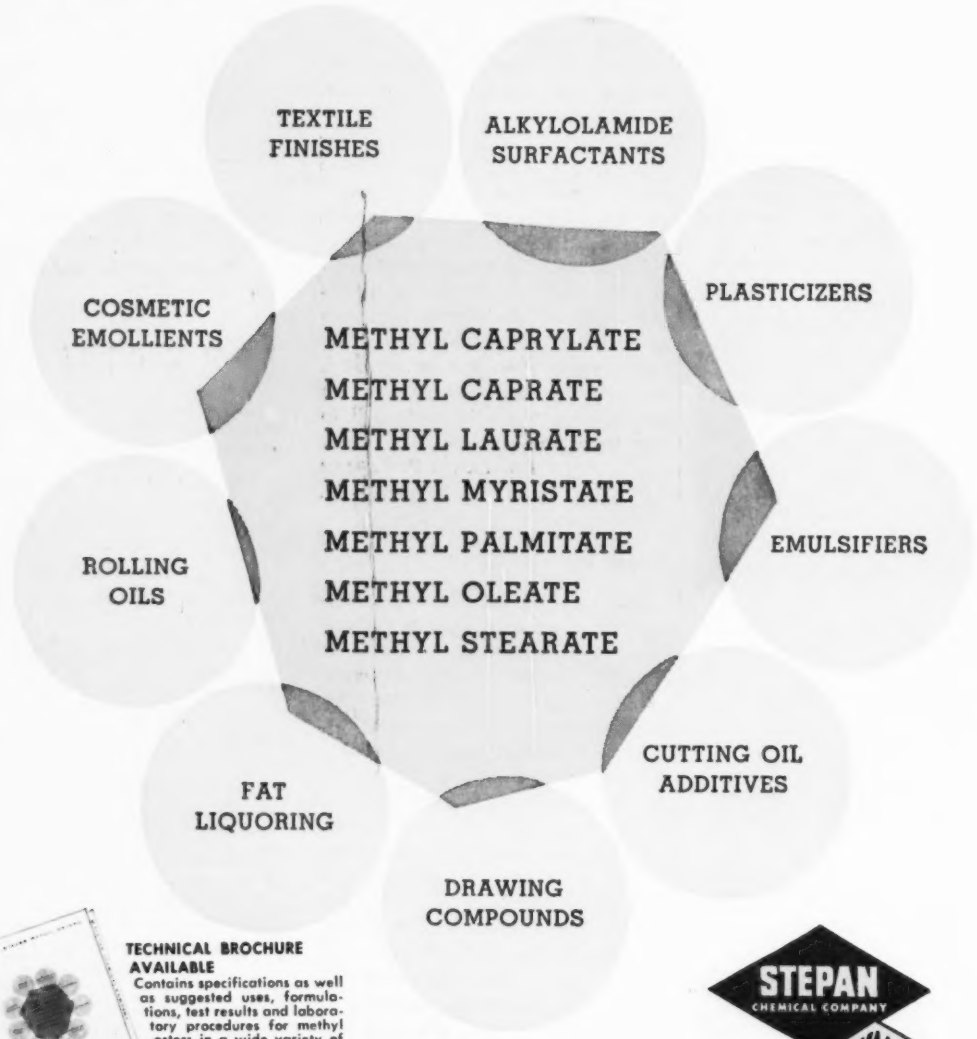
Fifth Nuclear Congress, Public Auditorium, Cleveland, April 5-10.

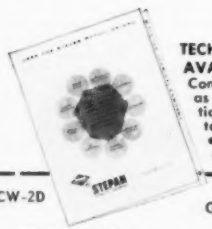
STEPAN METHYL ESTERS

OFFER IMPORTANT ADVANTAGES AS INTERMEDIATES OR ADDITIVES FOR A WIDE RANGE OF APPLICATIONS

Methyl esters offer a number of important advantages over fatty acids as intermediates. In most cases methyl esters are more reactive . . . offering cost savings from that standpoint. Further, they are more fluid and considerably less corrosive than fatty acids. Many reactions involving methyl esters can be run in plain steel, eliminating the need for costly storage tanks and reactors.

The new Stepan plant at Millsdale, Illinois (near Joliet) is now producing in quantity a wide range of methyl esters of high purity and excellent uniformity. We would be pleased to furnish you with working samples, technical bulletin and prices.





TECHNICAL BROCHURE AVAILABLE

Contains specifications as well as suggested uses, formulations, test results and laboratory procedures for methyl esters in a wide variety of applications.

CW-2D

Gentlemen: Please send

☐ Technical Brochure ☐ Working Sample of

.....

(Fill in particular esters)

Name .....

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Address .....

City ..... Zone .... State .....

STEPAN CHEMICAL COMPANY NINOL

STEPAN

CHEMICAL COMPANY

427 West Randolph Street, Chicago 6, Illinois

Telephone: STate 2-4711

AMERICA'S MOST COMPLETE LINE OF SURFACTANTS

Business
Newsletter

CHEMICAL WEEK
February 14, 1959

European companies are selling to Russia both chemical equipment and know-how.

In one of the biggest deals to date, an Italian firm, the Chatillon Co., has won a contract to build a $40-million viscose tire-cord plant at Saratov. The unit will turn out 50 metric tons/day of cord, employ 2,000. Fifty Chatillon employees will go over to train Russian operators.

Russia set a precedent for its future negotiations by agreeing to an advance payment to close the deal. Chatillon will get a total of $20 million in pounds, two-thirds to pay for Italian material and equipment.

English companies are also closing deals with Russia. The latest, a $503,200 order for mixing equipment and extruders to make polyethylene film, has just been awarded to Francis Shaw & Co. (Manchester). Two other British companies recently won orders for sodium sulfate spray-drying equipment and polyvinyl chloride plasticizing equipment.

But Russia will need a lot more Western equipment to meet its chemical industry goals. During the first 10 months of '58, chemical construction fell short of planned levels by 40-60%, probably failed to meet the 68% increase planned for the whole year. The biggest lag is in plants for synthetic rubber, synthetic alcohol and artificial fibers. Many fiber, sulfuric acid, caustic soda and tire plants that were slated to start up by November still aren't in production.

•

U.S. trade attitudes have stirred a rumpus in Canada. It started with the refusal of the Aluminum Co. of Canada and Canadian British Aluminum to sell an exporter $1 million worth of aluminum for shipment to Red China. Alcan said it didn't want to "hazard relationships with steady customers"—meaning the U.S. Opposition politicians and labor leaders charge U.S. domination of Alcan, a subsidiary of Aluminium Ltd.

•

A spate of expansions makes news this week.

In Bound Brook, N.J., American Cyanamid is starting construction of a "multimillion-dollar" plant that will double its annual output of anthraquinone. The new plant, to be operated by the Organic Chemicals Division, will replace an existing unit at the company's Bound Brook complex (*see also Technology Newsletter*).

Mobay Chemical reveals it will boost to 18 million lbs./year the capacity of its Martinsville, W.Va., tolylene diisocyanate (TDI) plant. Completion is slated for early '60. The 50% expansion follows a similar 50% expansion of the plant, completed last fall.

Florida Nitrogen Co., subsidiary of Southern Nitrogen Co. (Savannah, Ga.), will build a $7-million nitrogen complex near Tampa, Fla.

Now in the blueprint stages are a plant to make solid lime nitrate plus nitrogen solutions for fertilizer and industrial uses, a nitric acid unit and an ammonia plant (*see also Market Newsletter*).

The new project, expected to employ about 100 persons, is the first of its kind in central Florida.

Du Pont will build a new wing on its high-purity silicon plant near Brevard, N.C., to produce single-crystal silicon. The plant already makes needle, rod and "chunk" forms. But total production (50,000 lbs./-year) won't be increased. Though output of the single-crystal form will be added, quantity of other types will be less.

•

Commercial Solvents is integrating vertically in petrochemicals. As a first step, it has purchased the assets—mostly wells and pipelines—of Louisiana Gas Production Co., a small producer in the Monroe, La., gas fields. CSC will use the new gas supply to help feed its two plants at nearby Sterlington. The latter's products: ammonia, methanol, nitroparaffins, ammonium nitrate fertilizer, and carbon black. The company plans to step up exploration and drilling in the area.

•

Tighter restrictions on chemical shipments through the Ohio River system may result from a new study launched by the eight-state Ohio River Valley Water Sanitation Commission at its quarterly meeting late last week. The project will determine what dangerous chemicals are being shipped on the river and whether they are a potential health hazard, and will result in recommendations of ways to handle emergencies.

•

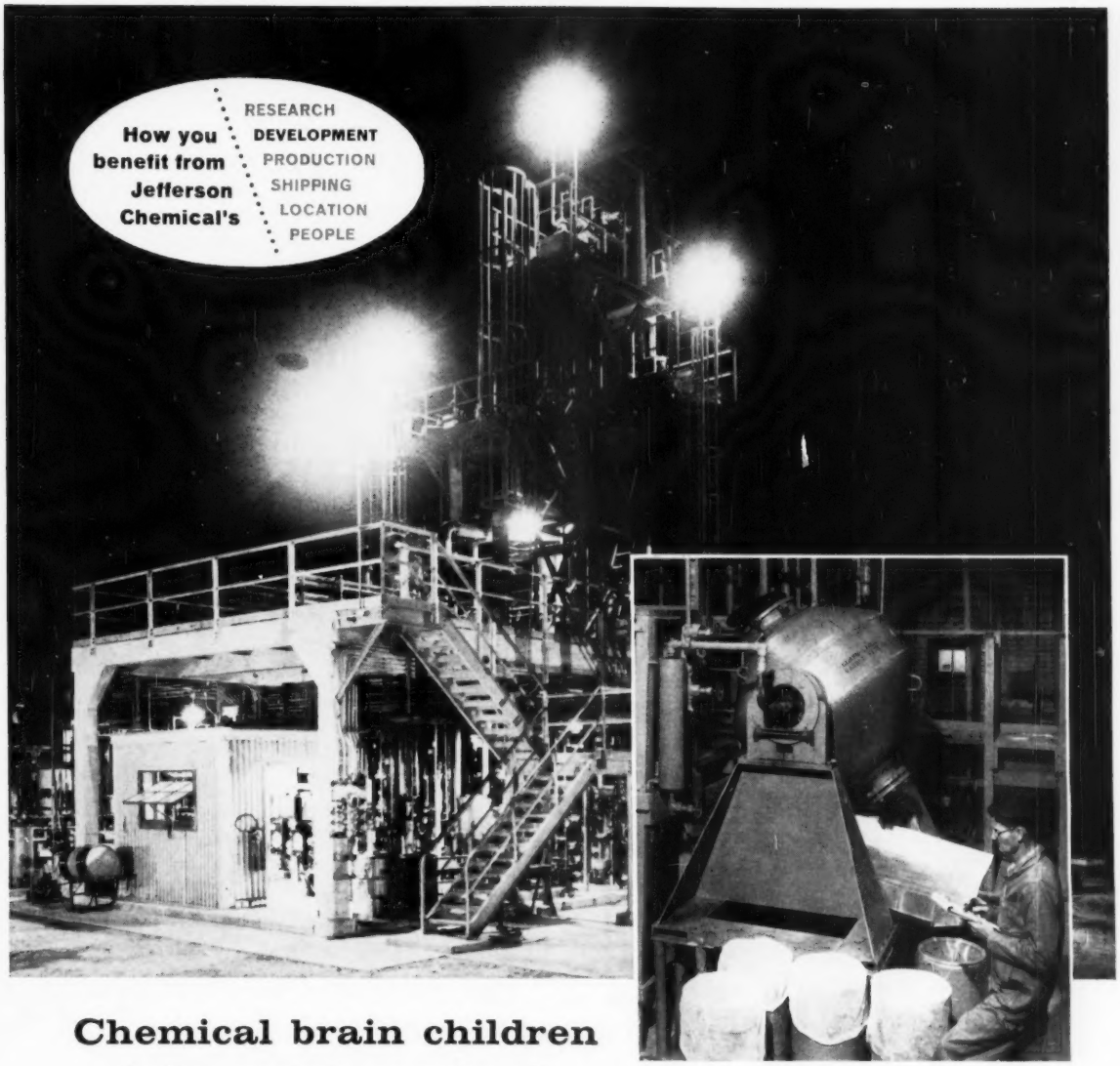
Last week's Universal Oil stock offering was marred by public reaction to the general drop in security prices. Investors snapped up the $72.5-million offering, taking all 2.9 million shares at $25. Upon realizing that the company's earnings probably will decline again this year, many investors reacted nervously to the fall-off in most stock prices. At the close of trading Monday, UOP quotations were 23⅛ bid, 23½ asked. The syndicate that sold the shares was supporting the price at 23.

•

Look for Reichhold's Canadian subsidiary to soon "go public" with a new stock offering. Reichhold Chemicals (Canada) Ltd. is negotiating with Canadian underwriters to sell somewhat less than $1 million in stock. The offering would be part secondary, part new money. The Canadian affiliate is now 50% owned by the parent firm; the other half is held by various executives and individuals connected with Reichhold.

•

St. Regis Paper and Monsanto Chemical are forming a new company to make and market Fome-Cor, a foamed plastic-and-paper "sandwich" material. Temporary headquarters will be in Springfield, Mass., where Monsanto's Plastics Division is located. Fome-Cor is now being made at St. Regis' Superior Paper Products Co. plant in Mt. Wolf, Pa. Chief uses of the product: containers, displays, stage settings.



Chemical brain children take some rearing!

When a new chemical leaves the laboratory glass in Jefferson Chemical's Austin Research Laboratories, it's consigned "out back" for further commercial investigation and development. Just a test tube's throw from the laboratories are the modern pilot plant and semi-works facilities.

Here new products, such as piperazine, piperazine hexahydrate, ethylene carbonate, the higher polyethylene glycols and N-methyl morpholine are produced for sales development. Pilot plant and semi-works scale equipment is available for both continuous and batch processes.

Processing information, such as optimum operating conditions, corrosion characteristics, compositions of various process streams are obtained. These data, together with the equilibrium data obtained in the laboratories, are frequently used in the design of improved or new plant equipment.

Producing special formulations to meet a customer's particular requirement is still another important phase of the development work at the Austin Laboratories. And thanks to an ably staffed and progressive research organization, Jefferson Chemical will continue to anticipate, and grow with, your chemical needs.

JEFFERSON CHEMICAL COMPANY, INC.

HOUSTON • NEW YORK • CHICAGO • CLEVELAND • CHARLOTTE • LOS ANGELES

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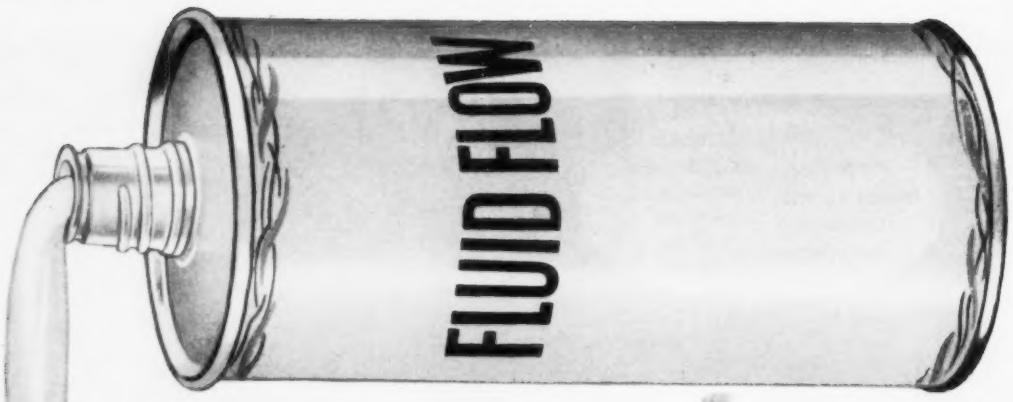

FLUID FLOW CANS BY CONTINENTAL

BEST FOR *Polishes and Waxes*

Your waxes and polishes take on many new selling advantages when you send them to market in Continental Fluid Flow cans. Consider these features:

No drip nozzle of polyethylene for free flow and exact dripless cutoff.

Wrap around lithography: Solderless construction leaves the entire can (dome top, too) free for decoration with Continental's superb lithography.

Matchless beauty that lasts: Protected by a special varnish that prevents marring during display.

Unsurpassed product protection insured by specially developed enamel linings.

Colored nozzles to match or contrast with can design for added sales appeal.

WIDEST RANGE OF SIZES!

Continental Fluid Flow cans are available in the widest range of sizes, every size you want to satisfy your customer's needs, from 12 oz. to one-half gallon. Get the best can for your polishes and waxes, *plus* Continental research and engineering service. Call Continental today.

QUALITY *Continental* SERVICE

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4
Canadian Division: 5595 Pare St., Montreal, Que.

Chemical Week
February 14, 1959

CPI's '59 Labor Calendar

January, February
OIL: 5% wage increase pattern set, but strikes crop up.
GLASS: 8-12¢ wage increase set, but eight plants struck.

April
RUBBER: Major contracts expire this month.

May and June
CEMENT: Most major contracts expire this month.

May 15 to Nov. 1
PHOSPHATES: Pacts end at 14 plants of 11 producers.

June
STEEL: Major contracts expire; strike threatened.
COPPER: Two major contracts expire this month.

July
ALUMINUM: Major contracts expire this month.

August to October
EQUIPMENT: Major contract renewals, wage hikes.

October
ATOMIC ENERGY: Wage reopenings at four major plants.
TRANSPORT: All major railroad labor contracts expire.

WIDE WORLD

At negotiating table, management will encounter labor's tougher stand backed by threat of strikes.

Wage Bargaining Threatens Peace, Profits

Strikes under way last week at some of the nation's largest glass plants and oil refineries hammer home one point: vigorous bargaining—and possible strikes—in many vital industries will exert powerful leverage on chemical companies' sales and earnings this year.

If there's a six-week "Big Steel" strike this summer (as has been predicted) . . . or if a rubber strike were to cut into auto production . . . or if the cement workers were to stymie construction with a repeat of their '57 virtually industry-wide work stoppage . . . direct and side effects would reverberate throughout the chemical process industries.

Likelihood of such shutdowns this year is not to be ignored. Thus far, both labor and management have been showing unusual determination in wage negotiations, and pressures on both sides will probably continue strong all through the year.

Management is being pressed to help check inflation by keeping costs and prices down; unions are under pressure to keep raising their members' standards of living.

And now that the oil workers have obtained wage increases averaging about 13½¢/hour, employees in chemical and other industries will demand treatment in kind this year.

More Adamant Stands: Examples of stiffer bargaining attitudes this year are not hard to find. At Port Arthur, Tex. (*see p. 84*), two locals of the Oil, Chemical & Atomic Workers Union have been striking Gulf Oil's big refinery—despite Gulf's offer of the same 5% wage increase that OCAW locals have accepted at many other locations.

Heart of the dispute: a clause—proposed, and insisted on, by Gulf—that would clearly establish management's right to assign any employee to any job, at least for emergencies.

OCAW charges that this is a move to wipe out the lines between various types of craft work; Gulf asserts that in resisting the company's efforts "to utilize its work force in a more efficient manner," the union is trying to retain a system that encourages featherbedding.

Another instance: the strike at eight glass plants of Pittsburgh Plate Glass Co.; 13,000 members of United Glass & Ceramics Workers Union have been out since late October. Here, too, the disagreement involves rules on distribution of work among employees; but wage and pension rates and incentive pay are also at issue.

And just last week, American Cyanamid and a small local of the International Chemical Workers Union ended their more-than-two-month spat at Mobile, Ala. The local went on strike Nov. 29, last week agreed to accept terms including wage increases that are estimated to average

9¢/hour. This plant produces alum and rosin sizes.

Chemical Bargaining: Most large chemical companies bargain on a strictly plant-by-plant basis, with no uniform date for contract expirations; so contract renewal and wage-reopener negotiations are on the stove every month. Union Carbide has about 100 labor agreements in force, with expiration dates scattered all over the '59-'61 calendars. American Cyanamid has about 50 wage negotiations on its '59 schedule.

Chemical bargaining units covered by pay pacts expiring this year vary widely in size. Cyanamid's Mobile plant, just back in production, has only about 30 employees; the Wyandotte plant at Wyandotte, Mich.—where OCAW and company officials are negotiating this month for a contract to replace a 30-month pact signed in '57—has about 2,000 workers; Dow Chemical and District 50 of the United Mine Workers next month will be discussing new contract provisions for some 7,000 employees in the Midland, Mich., area. In June, American Viscose and the Textile Workers Union will be seeking a new agreement for more than 10,000 employees at seven plants in three states.

Steel Strike's Impact: Probably the biggest labor crisis of the year will come in June when the United Steelworkers present their formal demands to the "Big Three": U.S. Steel, Bethlehem Steel and Republic Steel. The demands are sure to be imposing, management seems determined to hold the line on inflation, and a strike is regarded as very possible.

What would be the impact on the CPI? Looking back at the big steel strikes of '52 and '56 doesn't give a clear-cut answer. The '52 stoppage—longest steel strike in U.S. history (21 million man-days worktime lost)—disrupted sales and production schedules of numerous chemical companies; but over-all, the effects are hard to measure.

During the four-month period (May 1-Sept. 30) that included the entire strike and resumption of steel production, sales of chemicals and allied products totaled 1.7% less than in the corresponding period of the previous year. But in '56, sales of chemicals and allied products during the May-September period (which included a five-week steel strike in June and July) were 5.2% higher than in the same months of '55.

As usual, cases of multiplant bargaining in the chemical industries will be few and far between this year. ICWU and Lever Brothers have a master agreement covering about 3,000 employees at five plants. Officials of independent unions representing some 15,000 employees at Du Pont plants met recently in Atlantic City, N.J., to discuss wage goals in this year's negotiations; and indicated they would try to achieve company-wide bargaining on fringe benefits. And late this week at Mulberry, Fla., ICWU is holding a conclave to plan for bargaining with 11 phosphate producers in that state.

How CPI Paychecks Increased in '58

Average hourly earnings. Source: U.S. Dept. of Labor

	DEC. '57	DEC. '58	GAIN
Paper and allied products	$2.08	$2.16	3.8%
Petroleum and coal products	2.73	2.77	1.5%
Rubber products	2.31	2.43	5.2%
Nonferrous metals	2.42	2.55*	5.4%
Stone, clay, glass products	2.10	2.16	2.9%
Nonmetallic mining	2.05	2.12	3.4%
Chemicals and allied products	*2.26*	*2.36*	*4.4%*
Industrial chemicals	*2.45*	*2.53*	*3.3%*
All manufacturing	*2.10*	*2.19*	*4.3%*

* CW estimate.

'High Level' Hunt

A major hitch in the development of competitive nuclear power — the disposal of radioactive waste — was the subject of a hearing last week by the Joint Congressional Committee on Atomic Energy.

To solve the problem, the Atomic Energy Commission is searching for suitable burial sites. Where they are finally located will likely have a major impact on the location of plants reprocessing spent fuel elements from atomic power stations.

This was one of the principal conclusions to come out of the five-day meeting, which heard testimony from more than a score of government and industry experts.

High and Low: The problem centers around "high level" wastes, which result mainly from reprocessing of spent fuels. "Low level" wastes—e.g., contaminated clothing, reactor coolant water and contaminated machinery—are, for the present at least, being safely dumped into streams and the ocean or buried in numerous disposal areas.

But the more dangerous "high level" wastes, which may remain radioactive for hundreds of years, are being concentrated and stored underground in leakproof containers. Since the containers may fail in 50 years, this is considered, at best, a temporary arrangement.

Freight Savings: Harold L. Price, director of AEC's Division of Licensing and Regulation, points out the need for regional burial grounds to minimize transportation costs. Preliminary survey work has been accomplished at several spots, he said. Deep wells or salt caverns are a strong possibility.

Sites for both power reactors and chemical reprocessing plants should be chosen with the location of the waste disposal facilities in mind, several experts advised the lawmakers.

The committee also heard scant hope that developing uses for the waste would ever provide a solution of the waste problem. They stressed the need for continuing the search.

Another need is for clearer lines of jurisdiction between state and national agencies, the committee found. Members are skeptical that the federal government can ever safely step out of the picture.

'58 Spurts Spur '59 Hopes

Everyone knew that U.S. chemical companies were moving into 1959 on a rising business curve; but until now, few realized just how steep the climb has been.

Most companies closed out 1958 with impressive late earnings gains. Result: an unexpected whopping advance in profit margins.

As mirrored in the *CW* Earnings Index (*above*), profit margins soared to 9.6% from a sputtering 7.3% in the previous quarter. Not since 1955 has such a spectacular quarterly gain been registered.

Top Scorers: Many companies widened their earnings-to-sales ratios even further. Du Pont, for instance, will rack up about $56 million in earnings on sales of $502 million—an 11.1% margin. Pfizer, also still compiling final figures, is expected to come up with a margin in excess of 12%. Rohm & Haas's average for the quarter is 10.9%; Stauffer, a lusty 10.2%, and Hooker, 10.1%. Several others will be close to, or just under, the 9.6% mark.

Helping to increase margins: a widespread boost in productivity, brought about by cost-cutting, plus a surge in orders during the final months of the year.

Diamond Alkali President Raymond Evans attributes burgeoning fourth-quarter earnings to "the influence of cost-reduction efforts and modestly better business." Hercules President and Chairman A. E. Forster, reporting only a slight decrease for the entire year, says the recession's effect on earnings was minimized through greater efficiency of operation.

Continuing Climb: Though year-end totals in most cases failed to equal '57's, the rebounding fourth-quarter results are nurturing optimism for the current year's operations.

Harshaw Chairman W. J. Harshaw told stockholders: "Present indications are this rise is continuing and will reflect both better sales and earnings for the next two quarters." Allied Chemical is also optimistic, cites steady profit-margin improvements.

And Union Carbide Chairman Morse Dial reports that industrial gases are making a strong recovery and that chemicals and plastics actually showed a slight improvement over '57. The outlook, says Dial, "is for continued improvement."

Teaming in Trialkyls

After completion of closed-door negotiations last week, Hercules Powder and Stauffer Chemical have agreed to form a new company that will make aluminum trialkyls, and other aluminum alkyls.

The two parent firms haven't yet chosen a name for the new company. Its initial production will be more than 1 million lbs./year of organometallics.

Products—to be made by a Ziegler process—will be used as intermediates to make polymerization catalysts, straight-chain alcohols and olefins; and as pyrophoric fuels in ramjet-powered missiles and high-altitude turbojet flame sustainers.

Both companies are confident that new applications will develop when large-volume availability is assured.

Raw materials will be ethylene and other olefins and aluminum. The companies haven't yet chosen a plant site, although observers say Louisiana is a good bet.

Initially, Stauffer's Anderson Chemical Co. division (Weston, Mich.) will be exclusive marketing agent for the new plant's products. Prior to startup, a semicommercial supply of aluminum alkyls will be available from the Hercules research center, near Wilmington, Del.

Co-ops Gain Sales

Farmer cooperatives are continuing to increase their business. And in sales of fertilizers and farm chemicals, the co-ops' gains—according to figures reported last week by the U. S. Dept. of Agriculture—have been "substantial."

In the 1956-57 crop year, 4,143 co-ops rang up more than $274.6 million in fertilizer sales; and 2,334 co-ops reported more than $40.7 million in sales of other farm chemicals. Three years earlier, 3,621 co-ops tallied $232.1 in fertilizer sales; and 1,689 co-ops sold $26.6 million worth of ag chemicals.

Over that three-year period, co-ops' fertilizer sales increased 18.1% and their farm-chemical sales jumped 53.2%. Farm operators' purchases of fertilizers and lime from other sources dipped 2.2%.

Over-all, farm co-op business in 1956-57 amounted to $10.4 billion.

Betting on Aussie Chemicals

U.S. capital and know-how will soon give Australia's new petrochemical industry a major shot in the arm. Several U.S. chemical companies and their affiliates have joined hands to build in Melbourne a $50-million, four-plant complex that will produce polyethylene, styrene and GR-S rubber (CW Business Newsletter, Feb. 7). Construction of the complex—15 months under negotiation—will start "almost immediately," is due onstream by mid-'61.

Sparkplug for the four-way venture is Standard-Vacuum Oil Co. a subsidiary of Socony Mobil Oil Co. and Standard Oil of New Jersey. Stanvac's affiliate, Vacuum Oil Co., will build the key unit of the complex, an ethylene and butadiene plant. Feedstock for the plant will come from Stanvac's Altona (near Melbourne) refinery, where a $5-million expansion, almost completed, has upped crude capacity 25%, to 41,000 bbls./day.

Stanvac's ethylene will feed a 15-million-lbs./year polyethylene plant, to be built by Union Carbide's affiliate, Union Carbide Australia Ltd. Some of the ethylene will also be piped to a styrene monomer plant. This will be built by CSR-Dow Pty. Ltd., which was formed for the venture by Dow Chemical Co. and CSR Chemicals, a major Australian polystyrene producer.

Part of Carbide's polyethylene production is already earmarked for the New Zealand market. A portion of the styrene will go to CSR's Sydney plant, which has been producing polystyrene under a Dow license.

The rest will go to a GR-S plant. To build the plant, Stanvac is inviting participation by Goodyear, Dunlop, and other local tire makers.

Stir in Petrochemicals: Other developments also point up the bright future of petrochemicals in Australia. Shell Chemical (Australia) Proprietary Ltd., a subsidiary of Shell Oil Co. (London), has decided to put up a $2.8-million detergent alkylate plant in Geelong, Victoria. It's due onstream in early '61, will save Australia more than $1.4 million/year in foreign exchange.

The new plant will be Shell's third in Australia. It recently opened a sulfuric acid plant in Geelong, and will build an Epikote resin plant in Clyde, near Sydney.

Monsanto also has ideas about stepping deeper into Australian petrochemicals. Its affiliate, Monsanto Chemicals (Australia, Ltd.), which it controls with its English subsidiary, claims to be Australia's biggest polystyrene producer. It has been considering plans to build a $4.5-million styrene monomer plant in Sydney. Both Monsanto and CSR have been importing styrene from the U.K. and Germany.

Monsanto's partner in the styrene project would be Petroleum and Chemical Corp. (PACCAL), an affiliate of Caltex. They're expected to join later in other petrochemical ventures. Monsanto already produces phenolic, polyester, polyvinyl acetate, phenol-formaldehyde, liquid phenolic, and amino resins, in addition to polystyrene, in Australia.

Still another petrochemical partnership is reportedly shaping up between Goodrich, represented now by a chemical distributor in Australia, and Ampol Petroleum, an oil distributor. Plans are still in the "possibility" stage.

Search for Crude: So far, the crude oil to feed Australia's petrochemical industry must be imported. Most of Stanvac's, for instance, comes from Indonesia and the Mid-East. But an intensive search for domestic deposits is under way.

The latest scheme: an agreement between Delhi-Taylor's Australian subsidiary and two local companies to embark on a two- to five-year exploration and drilling program that could cost them some $10.7 million by the end of '63. Government subsidies could boost the stake even higher.

Much of the equipment for the new petrochemical complex will come from the U.S. and Europe. As a result of last summer's revision of Australia's import curb on capital equipment from the dollar area, U.S. equipment makers will probably be getting a greater proportion of new orders—at the expense of European manufacturers. U.S. equipment — more highly automated — is wanted in labor-short Australia.

ILMENITE SCORE

Exploration, Evaluation

Du Pont —Lexington, Camden, Tenn.

Ready for Production

Asarco —Lakehurst, N.J.
Union Carbide —Amelia Island, Fla.

In Production

American Cyanamid —Piney River, Va.
Du Pont —Starke and Lawtey, Fla.
Florida Minerals —Wabasso, Fla.
Marine Minerals —Bath, S. C.
Metal & Thermit —Beaver Dam, Va.
National Lead —Tahawus, N. Y.
Rutile Mining —Jacksonville, Fla.

More Ore for Pigments

U.S. production of titanium oxide pigments can be stepped up considerably on very short notice, it appears this week. Here are the latest developments:

- American Smelting and Refining has decided to take up its option on "some thousands of acres" of ilmenite-bearing lands in New Jersey's pine country near Lakehurst, about 45 miles east of Philadelphia and 15 miles inland (*CW Business Newsletter, Nov. 23, '57*).
- Du Pont is completing its 125-tons/day titanium dioxide pigments plant at New Johnsonville, Tenn., and is exploring the nearly 3,000 acres of ilmenite-bearing land it leased in nearby areas (*CW Business Newsletter, Nov. 8, '58*).
- Union Carbide—whose Metals Co. division has indicated an interest in producing various titanium chemicals (*CW, Nov. 22, '58, p. 77*)—is working on the dredging equipment that will be used to mine both ilmenite and rutile on a 3,000-acre, company-owned tract on Amelia Island, off the northeast coast of Florida.

COMPANIES

Kaiser Aluminum & Chemical and Mexico Refractories Co. (Mexico, Mo.) are negotiating toward merger of their refractories businesses. Kaiser makes basic magnesia refractories for the steel, glass, cement and copper industries. Mexico Refractories produces clay, silica and alumina refractories and a variety of special refractories products. Kaiser operates three refractories plants near Salinas, Calif., and one at Columbiana, O. Mexico's plants are in Mexico, Mo., Van Duke, Pa., Frostburg, Md., Niles, O., and Bronte, Ontario.

And last week, Kaiser closed down another potline at its Mead, Wash., reduction plant. Reason: to adjust plant inventories of primary aluminum. With two of eight potlines closed, operations are now running at 75% of capacity.

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Union Carbide has sold its six New York headquarters buildings to Tishman Realty for $14 million. Carbide will move into its new 53-story office building by June 1, '60.

•

Sun Chemical Corp. (New York) has bought the operations, trademark rights and certain assets of the Ampruf Paint Co. of New Jersey, Inc. (East Paterson). Amount of the transaction was undisclosed. Ampruf's line of household, maintenance and specialty paints—similar to products made by Sun—will be marketed under the Ampruf label. The company will retain its management, operating in the future as Sun's Ampruf Paint Division.

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Atlantic Coast Industries (Hoboken, N.J.) has obtained an option to buy all of the common stock of Mohawk Chemical Co. (Franklin, N.J.), producer of aminophenols (including APAP pain-reliever compound). Atlantic is a diversified producer of basic industrial products, including chemicals and metals.

EXPANSION

Polyethylene: Low-density polyethylene capacity at Monsanto's Texas City plant is being upped from 67 million to 100 million lbs./year. Construction has started, slated for completion in the third quarter of this year. The expansion, says Monsanto, "telescopes the commercialization" of technical advances resulting from studies begun in '49.

Piloting was carried out in two stages at the company's Dayton, O., research lab and at Texas City. Monsanto is planning to soon offer "evaluation quantities" of linear (high-density) polyethylene.

•

Resins: Reichhold Chemicals starts construction this month of a water-soluble-resins plant at Tacoma, Wash. Cost: $250,000. Capacity has not been disclosed; but the plant will have two reactors, compared with the four 10,000-gal. reactors at Reichhold's nearby Seattle plant. The new plant will eventually replace the one in Seattle. Products: formaldehyde and urea resins; various emulsions, including polyvinyl acetate. Production is expected to start in four months.

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Hydrogen: Canada Liquid Air Co. plans include a $100,000 hydrogen plant for Edmonton, Alta. It would be western Canada's first hydrogen plant.

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Sulfuric Acid: J. R. Simplot Co. is starting construction of a 200-tons/day sulfuric acid unit at its Pocatello, Ida., triple superphosphate plant.

•

Plaster: Gypsum, Lime and Alabastine Canada Ltd. has expanded capacity of its Montreal plaster plant 25%, to 20 tons/hour.

•

Pharmaceuticals: Western Wholesale Drugs Ltd. (Vancouver, B.C.) has completed a new manufacturing plant and sales facilities. Cost: $800,000.

FOREIGN

Chemicals/Europe: Pennsalt Chemicals is pushing ahead with plans for manufacturing and selling in the European "Common Market." European operations will be handled by Pennsalt International Corp. S.A., which set up headquarters in Lausanne, Switzerland, last year. Initially, the company will market chemical specialties, but expects to have one or more production units operating by '60.

Pennsalt has just concluded an agreement with R. Cruickshank, Ltd. (Birmingham, England); the latter will manufacture and distribute Pennsalt metal-processing chemicals in the U.K.

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Catalysts/Germany: Chemetron Corp., in conjunction with Sued-Chemie (Munich), has formed an affiliate. The new firm, Girdler-Suedchemie Katalysator, G.m.b.H., will be headquartered in Munich, and affiliated with the Girdler Catalysts unit of Chemetron's Chemical Products Division. It will provide sales and technical service for Girdler catalysts in Europe, the Middle East and Africa. Eventually, it will probably branch out into manufacturing.

•

Sales/Germany: Farbwerke Hoechst, Germany's second largest chemical producer, tallied this record in 1958: sales increased 7.3% (to $450 million), compared with an approximate 5% rise for the German chemical industry as a whole; exports accounted for 31% of Hoechst's sales (32.3% in '57); investments rose almost 4%, to $57.3 million; research and development outlays were up 4.5%, to $22 million.

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UNION PACKAGING SPECIALIST HENRY SCOTT

simplifies packer's inventory –trims costs by $42,000

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UNION BAG-CAMP PAPER CORPORATION

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Washington
Newsletter

CHEMICAL WEEK
February 14, 1959

Sale of chemical know-how to Russia is still a major issue in the continuing discussions on East-West trade. Two separate items highlight the week's events: (1) a hucksterish promotion by Amtorg, the Russian trading monopoly; (2) a graphic fill-in from the Manufacturing Chemists' Assn. to the new chairman of the Senate Foreign Relations Committee.

The time and effort needed to commercialize chemical processes was the highlight of a letter from MCA President John E. Hull to Senator J. William Fulbright (D., Ark.). Said Hull:

"Many illustrations can be given of the value [of U.S. chemical development work], but I shall cite here only a few. One U.S. producer of nylon, polyethylene, urethanes and hydrogen peroxide expended more than 2,100 man-hours of scientific and technical effort in the development of these products. Another U.S. producer estimates that the bringing into commercial production of butyl rubber required 1,100 man-years of similar work and know-how. Still another U.S. producer estimates that it has taken that company 1,200 man-years of effort and know-how to bring into commercial production certain polyethylene products and an additional 1,000 man-years of plant engineering and know-how to create the capacity to produce 15,000 tons/year of vinyl chloride resin and plastics.

"All these achievements of American brains and American enterprise the Russians now want to buy from us under the guise of easing trade barriers while they continue to concentrate their scientific and technical manpower on devices and schemes by which they could destroy the free world."

Meanwhile, Amtorg is gearing up trade plans, with a substantial campaign in the works to interest American business in Iron Curtain deals, for both exports and imports. Heading the drive for stepped-up trade is Nikolai Smelyakov, an important Communist party official who flew from Moscow with Anastas Mikoyan to take charge of Amtorg's expanded operations in this country.

Recent Russian and satellite trade deals with U.S. firms are advance tips of the "penetration" Amtorg apparently has in mind. The Commerce Dept. last week agreed to reconsider, for example, application by a U.S. exporter to ship more than 12,000 tons of steel petroleum pipeline to the U.S.S.R. Commerce turned it down originally because the order called for pipe over 24 in. in diameter, a category under current East-West trade controls.

Commerce's reconsideration reflects new interest in trade expansion. Other recent shipments to and from Russia and its bloc have made headlines. They include a shipment of 18,000 tons of Rumanian petroleum to Commerce Oil Co., sales of Russian scientific equipment to Boston

Washington Newsletter

(Continued)

schools, reports of forthcoming imports of Russian wood pulp, exports of automotive steel plate to the Soviet Union.

But there are the makings of a policy hassle in Washington between State Dept. and Commerce Secy. Lewis Strauss. The State Dept. is satisfied with the present trade policy, while Strauss favors cracking down harder on export-import restrictions.

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Chemical companies have a big stake in antimissile systems for detection, tracking and destroying incoming missiles. Hundreds of millions are being spent in this area by the military.

Here's a rundown to give you an idea of how widely dispersed this kind of business is. Little of this shows up in documents or the budget; most of it is hidden under other labels.

Thiokol and Grand Central Rocket Co. are developing solid-fuel engines for the Army's Nike Zeus antimissile missile. Armstrong Cork is working on an artificial dielectric for the Zeus system; Dow, on a receiver-antenna dielectric; Coors Porcelain Co. on radomes; Ambassador Plastics, Inc., on artificial dielectric production equipment.

Other companies: Koppers, Plastic Film Products, Perry Plastics, Robinson Industries, McMillan Industrial Corp., Molded Insulation Products—all working on development of foam support for artificial dielectric systems.

Research on high-temperature resins for use in Zeus is being performed by Stanford Research Institute. Battelle Memorial Institute is doing research on high-temperature materials related to the same project.

Olin Mathieson is a member of a four-company team developing an airborne antimissile system, working on either the propulsion system or the warhead.

•

A new way to bring C.P.I. firms into uranium fuel-enrichment is seen by the Atomic Energy Commission, although any major market must wait for further development of the atomic power industry.

At present, enriched fuels for nuclear power reactors are processed in AEC gaseous diffusion plants from uranium hexafluoride (UF_6). But AEC officials say it could work this way: a manufacturer would purchase highly enriched UF_6 from AEC and process it further, then blend the product with natural uranium and sell the resulting enriched fuel to commercial users. In this way, they say, a substantial part of the ingredients of enriched fuel would move in commercial channels from start to finish and never be handled by AEC.

•

TVA methods are used in two-thirds of fertilizer output, according to a report by the Senate Patents Subcommittee. TVA wants to continue its policy of making patents available to private industry royalty-free as a means of keeping down the price of fertilizer to farmers.

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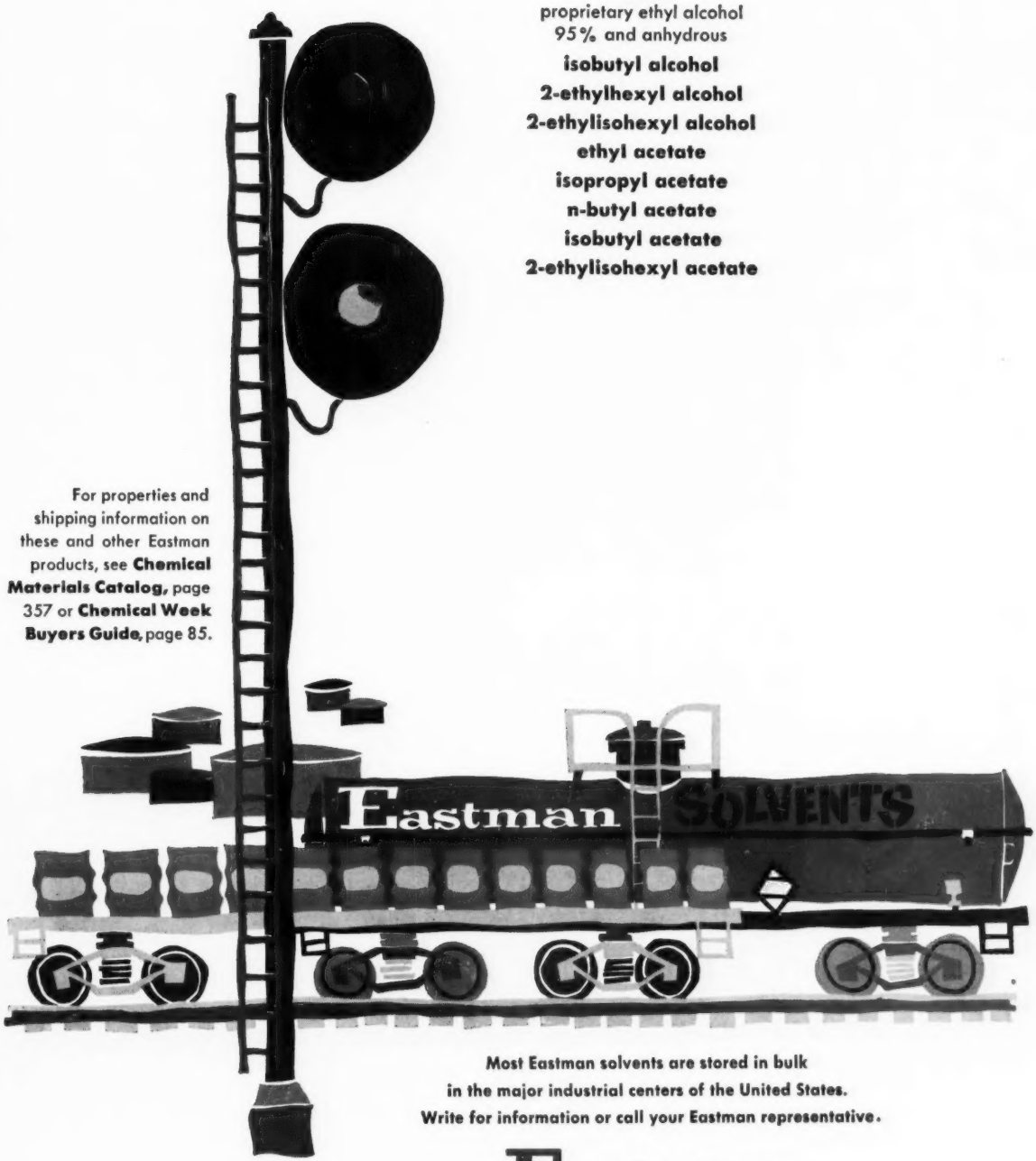

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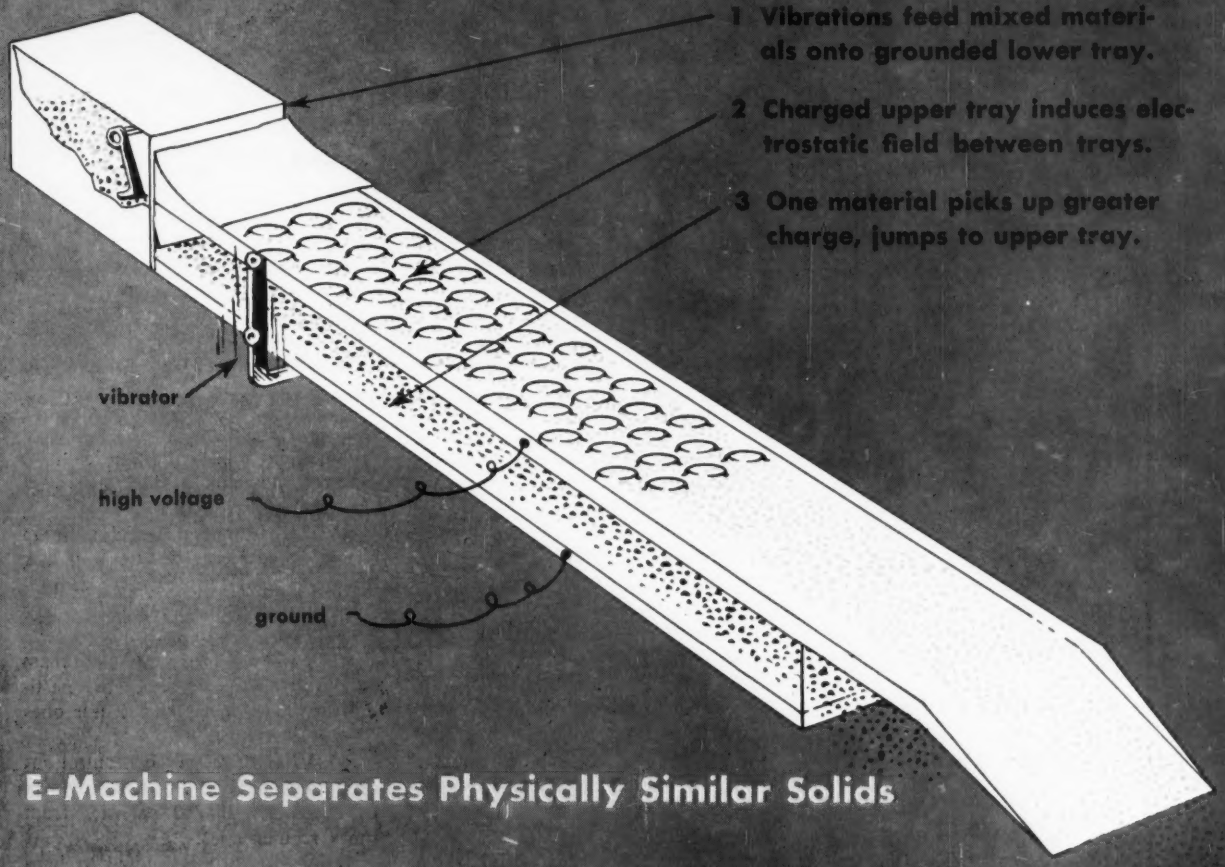

1 Vibrations feed mixed materials onto grounded lower tray.
2 Charged upper tray induces electrostatic field between trays.
3 One material picks up greater charge, jumps to upper tray.
vibrator
high voltage
ground

E-Machine Separates Physically Similar Solids

Charged for Slicker Solids Separations

The sketch (above) shows how General Mills uses an electrostatic device to separate highly complex grain mixtures. This week, its new "E-Machine" is being focused on a multitude of other materials, as the company's researchers take dead aim at the chemical process industries' tough solids-separation problems.

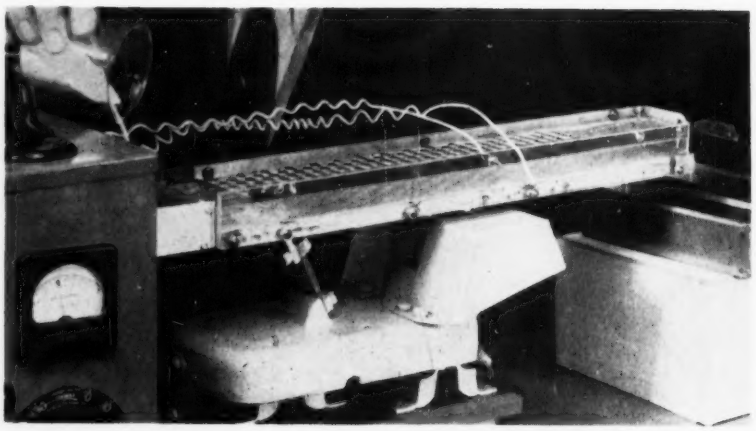
There seems little doubt that process industries firms will be intrigued by the possibilities the machine offers. By taking advantage of even slight electrical differences between components of a dry, granular mixture, the E-Machine is able to effect a separation.

At present, in addition to separating flour-milling stocks, its potential seems greatest in the mineral field—separating materials such as rutile, ilmenite and zircon from silica and one another. But to whet the appetites of others, General Mills is inviting firms to discuss sending samples of hard-to-separate mixtures to its applied physics section in Minneapolis, Minn., where the new machine was developed.

Samples will be tested on one of the three units the company has built so far—a 4-in. x 14-in. single-deck laboratory model; an 8-in. x 6-ft. single-deck pilot model; a 2-ft. x 6-ft. seven-deck commercial model. And, the results of these test separations will undoubtedly map the E-Machine's future.

For the Future: It's too early, of course, to predict what will happen. General Mills holds a recently issued patent on the machine (U.S. 2,848,-108), could license others to make it. But the company indicates that if the machine proves out it will likely do its own manufacturing. If it does, the firm will have to compete in a long-established, though not particularly large, market. Machines now in use for separating solids by means of induced charges have rotating rolls and inclined chutes. General Mills feels that its E-Machine, which has a vibrating mechanism for moving the feed along its flat tables, has advantages over units that depend on gravity to feed the mixture through the electrostatic field.

Table-type separation permits control over the length of time the mixture remains in the electrostatic field. Speed can be adjusted to obtain the desired efficiency of separation. And the voltage of the upper table (or tray) can be adjusted so that only one of the components picks up sufficient



E-Machine lab model shows perforated deck for separating mixes.

charge to be lifted up through the perforations onto the upper tray (*see picture, above*).

How It Works: In the E-Machine, the mixture is fed onto the bottom, grounded tray. The upper tray (2 to 6 in. above the feed deck) is charged with several thousand volts. The electrostatic field between the two trays charges the particles as they are vibrated along the lower tray. All the material becomes charged, but only one component picks up enough charge to reach the upper tray. Its particles eventually find their way through the upper tray's perforations.

Key to efficient separation: ability to adjust conditions. In addition to voltage and polarity, the correct amplitude, frequency and direction of vibration, and the inclination of the electrodes (the trays) must also be determined.

General Mills found it desirable to add a vertical component to the vibration by mounting the electrode assemblies on springs. The up-and-down motion brings different sides of the particles into contact with the lower electrode, helps break up "islands" or clumps of particles.

The proper vibration amplitude and frequency are keys to determining the optimum thickness of the feed material layer and the speed with which it travels through the machine. Tilting the trays improves separation conditions in some cases.

Whether a particle will pick up enough charge to reach the upper level depends on these properties:

• Conductivity. The basic property that makes the system work is the conductivity of each material—no matter how low—with the relatively better conductors taking a greater charge, jumping higher.

• Size. Smaller particles jump higher because they develop a greater charge-to-mass ratio. Thus, size uniformity is important, with the outer limits being 4-300 mesh.

• Density. The charge-to-mass ratio will also cause less dense particles to jump higher than denser ones of the same size.

• Shape. Charge concentrations on points and edges favor the removal of irregularly shaped particles from more regular ones.

The E-Machine is limited to handling dry, granular solids that will feed satisfactorily by vibration. In addition to the obvious difficulties with sticky or moist materials, the machine also has problems separating fibers and threads (because they bunch together and form strings) as well as fine particles that readily form islands.

But General Mills believes that if the E-Machine performs well in separation jobs that can't be done by other means (e.g., magnetic separation) it will catch the CPI's fancy.

Proved Out: Practical effectiveness of table-type electrostatic separation has already been demonstrated by Foote Mineral Co. In the mid-'40s, Foote designed a machine similar to General Mills' that used six units to separate several tons/day of rutile-zircon mixture.

When the machine was deactivated about '50—because of government restrictions on uranium content of the feed mixture, not because of any defect of the system—some unsuccessful

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In addition to the rapid development of water resistance with the new AMP-ammonia formulations, considerable savings in costs may be expected since less AMP is required. Other performance characteristics of the AMP-ammonia formulations such as shelf-life, freeze-thaw resistance, leveling, and gloss were fully equal to the best commercial formulations.

Proved By Performance Tests

In a series of tests, the new AMP-ammonia formulation attained "excellent water resistance" in less than *two-thirds the time* required, and at *one-third the cost for amine* when compared with a typical formulation using morpholine. A new technical data sheet describing these and other tests made with typical commercial formulations is available on request.

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Ansul glycol diethers have an exceptional solubility for a variety of organic and inorganic compounds, especially inorganic hydrides. They combine high purity, low active hydrogen content, a wide range of boiling points. Some specific uses are: Ansul Ether 121—prevents moisture discoloration in varnish and lacquers. Ansul Ether 141—a solvent for sodium borohydride. Ansul Ether 161—removal agent for neoprene coatings. Ansul Ether 181—absorption refrigeration solvent. However, we believe that the potential for these unique solvents has only been touched. Their characteristics suggest applications as a detergent constituent, a diesel fuel additive, a cellulose derivative solvent. Tests are being run on the solubility of a number of inorganic compounds in Ansul glycol ethers. We'll gladly furnish information on the results. If any of our findings prove interesting to you, please write us. Samples and the services of our technical people are yours for the asking.

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attempts were made to interest others in its potential. Conjecture is that the machine was probably several years ahead of its time. It is now up to General Mills to determine if that time has arrived.

EQUIPMENT

Portable Cooler: Young Radiator Co. (Racine, Wis.) is out with a new mobile, package cooling unit for controlling the temperature of materials such as fluorochemicals and hydraulic oils. Units are offered with water- or air-cooled heat exchangers, pumps with Teflon seals for low-viscosity fluids. The unit's base will pass through standard-size factory doors, has casters that can be locked. A 5,000-watt (17,000 Btu./hour) unit will circulate 10 gal./minute of oil against a pressure of 250 psi.

•

Nonclogging Screens: The wedge-shaped wires of Wedge-Wire Corp.'s (Wellington, O.) new Taper-Slot screen is said to eliminate blinding of openings and pile-up of material during screening. The wires are looped around regularly spaced cross rods; the opening between two wires is tapered between the cross rods. The wedge shape of the wire prevents material from clogging as it flows toward the wider end of the taper. All screens are custom-made.

•

Explosionproof Thermostat: Fenwal Inc. (Pleasant St., Ashland, Mass.) is offering a new explosionproof thermostat for immersion in tanks, installation in walls. Unit is adjustable within 32-500 F range; it can be exposed indefinitely to temperatures 100 degrees below its set point, and for short periods to 100 degreees above set point. The thermostat has Underwriter Laboratories approval for Class 1, Group D hazardous areas.

•

Dry-Ice Storage: For convenient storage of dry ice by chemical process industries firms, Simard, Inc. (337 Broadway, Lynn, Mass.), offers a new line of storage cabinets with 100- to 900-lb. capacities. Cabinets have aluminum exteriors, welded galvanized interiors, Styrofoam insulation.

•

No-Drip Nozzle: Its new Type B nozzle contains an antidrain valve on the discharge side that completely eliminates after-drip, says Scully Signal Co. (175 Green St., Melrose 76, Mass.). The nozzle can be set to deliver any amount of liquid between closed and fully open positions by using a lever instead of the more conventional latch. The lever also eliminates shock pressure when the nozzle is closed, says Scully. Size: 1¼ in.

•

Valves: Several companies are out with new additions to their lines of valves:

• Sinclair-Collins Valve Co. (454 Morgan Ave., Akron 11, O.) is offering a new line of screw-mounted, diaphragm-operated air control valves for 5,000-psi. air service. Diaphragm operating pressure: 35-40 psi. Sizes: ½ and ¾ in.

• Kieley & Mueller, Inc. (64 Genung St., Middletown, N.Y.), is offering a new line of split-body control valves for high-temperature, high-pressure applications. K&M says that flow capacities are the largest now available in split-body valves.

• Everlasting Valve Co. (Jersey City, N.J.) has extended the jacketing over the neck of its new steam-jacketed valve to assure constant temperature of viscous flows. The valve comes in two models — an iron body for 125-psi. line pressure and 250-psi. jacket pressure, and a cast steel body for 150-psi. line pressure and 300-psi. jacket pressure. Sizes: 1½ to 4 in. with straight-operating lever; 6 in. with compound-operating lever.

• OPW-Jordan (6013 Wiehe Rd., Cincinnati 13) is offering a new pilot-operated back-pressure regulating valve with self-cleaning seats and clog-resistant passages. The body is cast-iron with flanged connections. Sizes: 2½ and 3 in. for pressures to 250 psi. and temperatures to 406 F.

•

Flow-Rate Calibrator: Brooks Rotameter Co. (P. O. Box 432, Lansdale, Pa.) is out with a new volumetric-displacement calibration stand for calibrating small flow-rate instruments with inert gases. Range: 50 to 5,000 cc./minute. Accuracy: 0.2%.

•

Air Washers: A new line of air washers, fabricated of rigid polyvinyl chloride for removing corrosive fumes from air, is offered by Industrial Plastic Fabricators, Inc. (Endicott St., Norwood, Mass.). In the washer, air velocity is first decreased, then the

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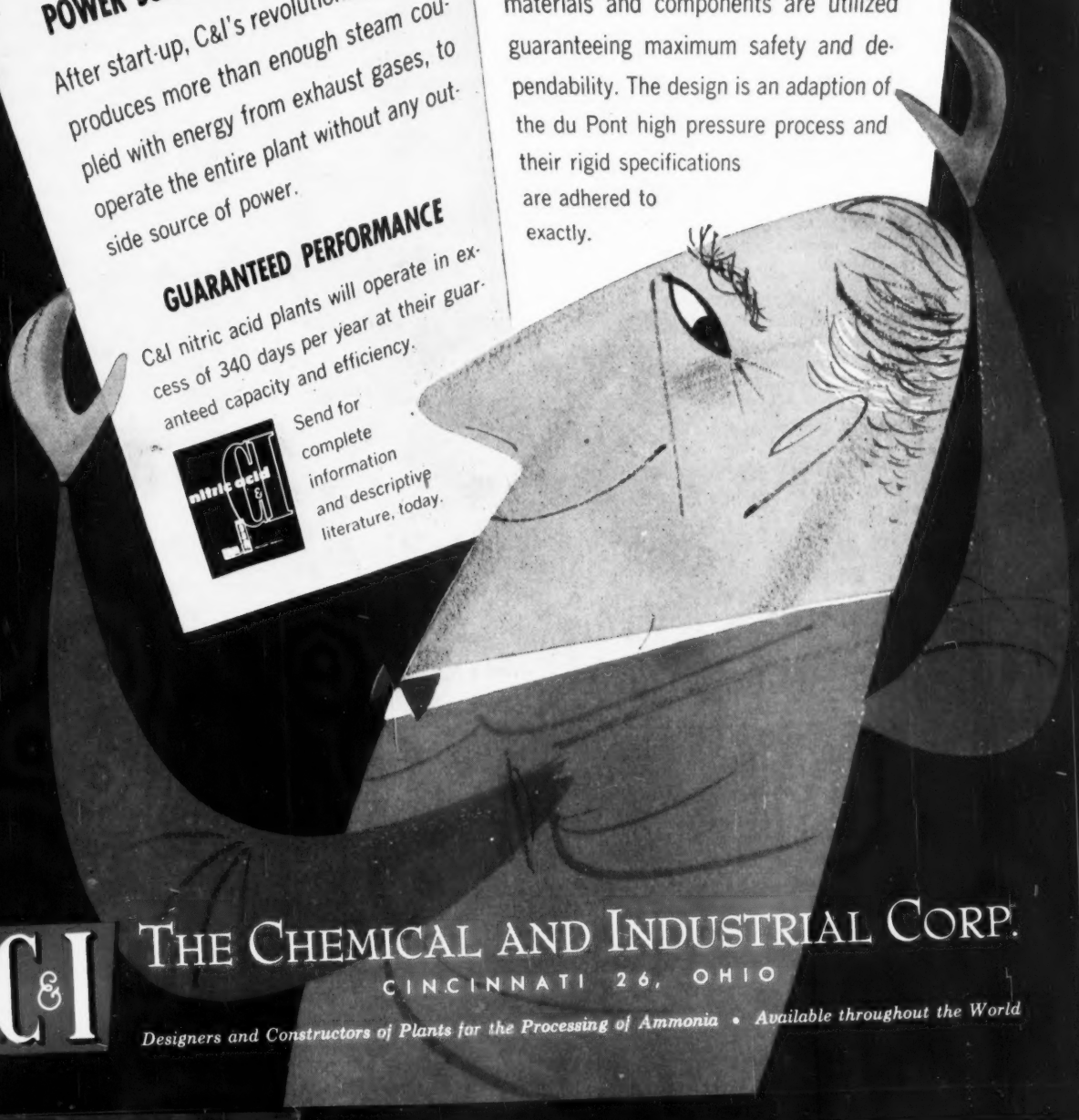

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The sebacic acid chain is the longest straight chain found in any of the commercially available di-basic acids. The longer the chain, the more flexibility is available; the straightness or absence of branches makes the chain very difficult to disturb structurally.

No matter what you link with the sebacic chain — the basic chain remains the same. Link it with alcohols to make esters and you have plasticizers or lubricants. React sebacic with glycols to make polyesters; link the sebacic to diamine to make nylon; to alkyds for paint and coatings. The sebacic chain also appears as the backbone of high quality polyurethanes.

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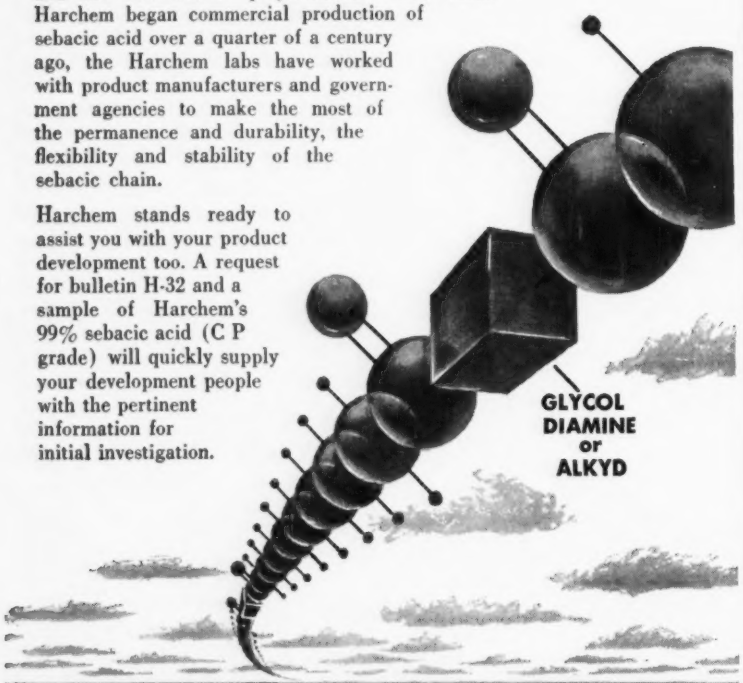
Harchem stands ready to assist you with your product development too. A request for bulletin H-32 and a sample of Harchem's 99% sebacic acid (C P grade) will quickly supply your development people with the pertinent information for initial investigation.



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•

Vertical Motor: General Electric Co. (Schenectady 5, N.Y.) is now making a new NEMA rerated vertical motor for easier installation and maintenance in pumping applications. The motor is totally enclosed, fan-cooled, explosionproof. Ratings: 7½ to 125 hp. at 1,800 rpm.

•

Gas Chromatography: Beckman Instruments' Scientific and Process Instruments Division (2500 Fullerton Rd., Fullerton, Calif.) has added a new temperature readout accessory to its gas chromatograph line. The accessory records column and sample inlet temperatures directly on chromatograph charts, can be used with instruments of various manufacture.

•

Work Clothes: A new line of lightweight, chemical-resistant, antistatic work clothes of 100% dynel is now offered by Worklon, Inc. (253 West 28th St., New York). The clothes' antistatic finish is guaranteed to last through the life of the garments, is said to withstand as many as 200 wash-wear cycles—the equivalent of about four years' use. The dynel fiber is claimed to have excellent resistance to acids, alkalis and solvents (*CW, Aug. 31, '57, p. 123*).

•

Electric Actuator: A new all-electric actuator for positioning valves, dampers, louvres, metering pumps and speed changers is available from Conoflow Corp. (2100 Arch St., Philadelphia). The actuator can also be used for on-off control of remote push-buttons in automated systems. Models are offered with travels from ½ to 4 in. and with maximum thrust of 700 lbs. Stroke speeds offered: 8½ in./minute at 100-lbs. load to 2½ in./minute at 700-lbs. load.

•

Solvent Recovery Unit: A small, low-cost package unit for solvent recovery is being offered by Vic Mfg. Co. (1313 Hawthorne Ave., Minneapolis). The unit is designed to reduce loss of water-immiscible solvent by evaporation.

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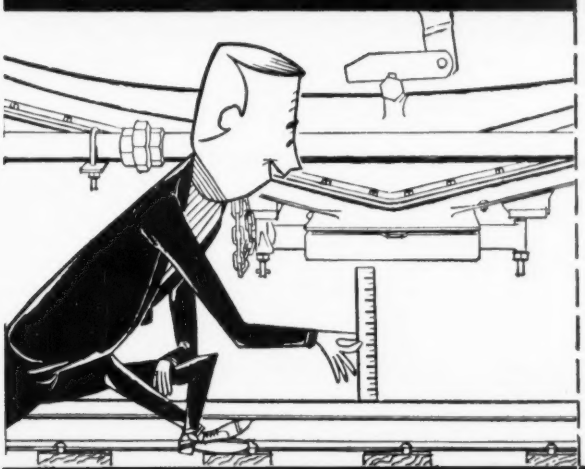

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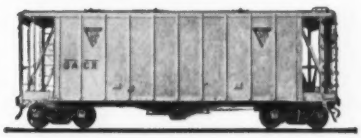

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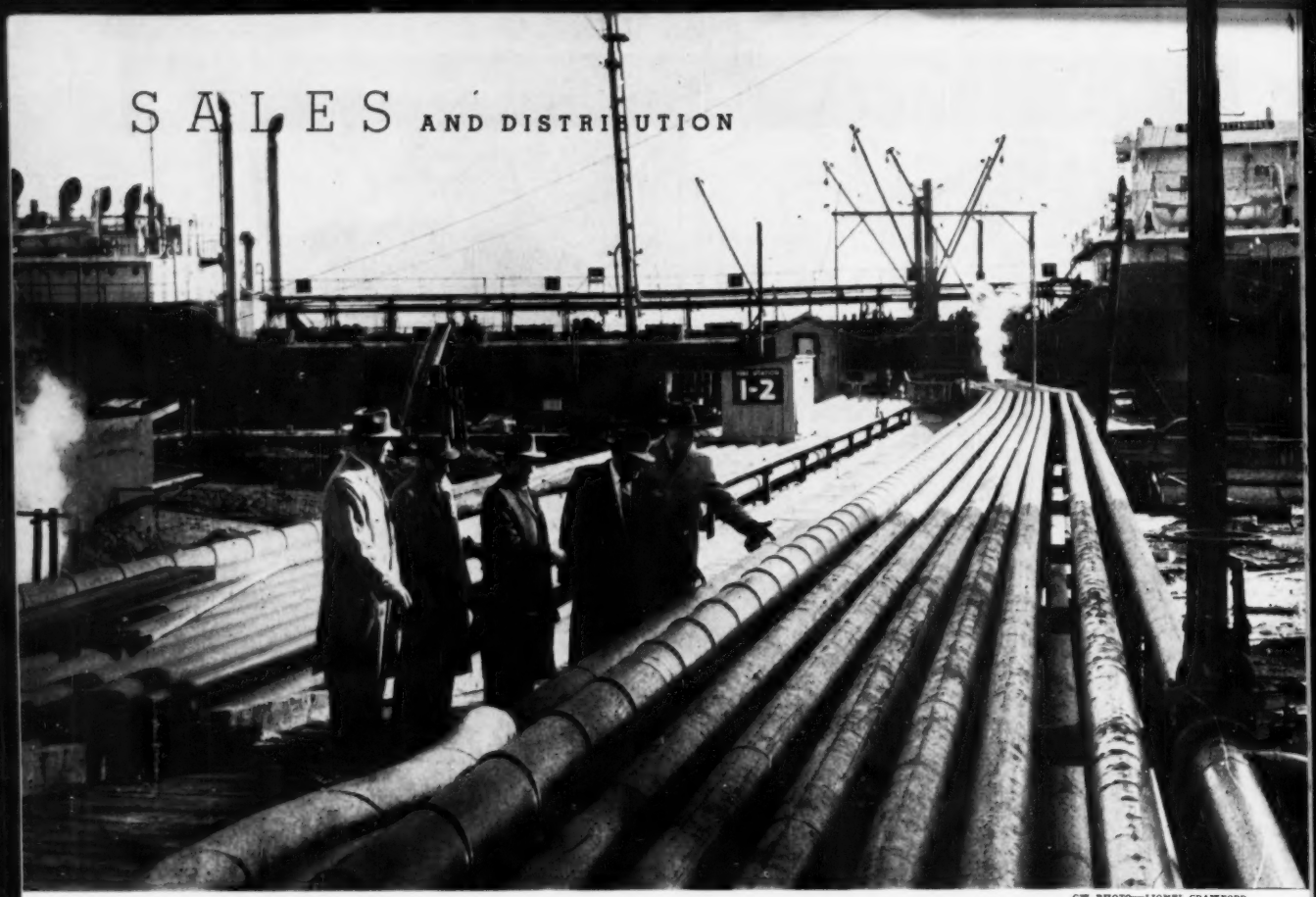

CW PHOTO—LIONEL CRAWFORD

At Carteret, N.J., unloading dock, Amsco management men inspect pipe used in transporting solvents.

Pipeline Path to Bigger Distributor Profits

Pipeline—miles of it—is foremost in the minds this week of top executives at American Mineral Spirits Co. And for good reason: they are planning to soon begin pipeline movement of mineral spirit-type petroleum solvents as the latest of a long series of steps to raise profits by cutting distribution costs through bulk shipments. Also planned: addition of high-profit chemical items to its product line, basic manufacturing operations and overseas ventures—probably in Europe.

Still engaged in final negotiations, Amsco is necessarily reluctant to divulge details of its pipeline plan, but does say that material will be piped a distance of some 800 miles from a point of origin in the Gulf area to terminals in the Southeast. When the valves are turned, the firm will become the first U.S. chemical products distributor* to use pipelines for transporting solvents.

*Mineral spirits are now piped by Shell Oil and Standard of Indiana. These companies, however, are integrated oil companies.

The pipeline arrangement is symbolic of the company's two-pronged approach to solvent and chemical distribution: maximum use of bulk transportation and storage to achieve rock-bottom distribution costs; a management policy that stresses "marketing mindedness," aims at making every employee a salesman.

Within the past two years, Amsco has opened 10 water terminals and sales offices in the East and Midwest, has expanded terminal facilities in the Midwest, Florida and Rhode Island. This permits maximum use of barge and tanker shipments to offset the recent sharp and rapid climb in rail freight rates. To a large degree, the switch was born of economic necessity. That's because most Amsco products sell in the 15-20¢/gal. price range, where transportation costs are an appreciable part of the total cost of the products.

Everybody Sells: On the marketing side, the company's policies have led to a gradual increase of sales staff to a total of 60 men. Executives, from the chairman down, still do a substantial amount of selling, even though the firm has moved into big-volume brackets.

How big is Amsco's sales volume? On this point, the firm is highly reticent, admits only to handling "hundreds of millions of gallons." Trade sources, however, say the firm's annual sales are in the $20-40-million range. In recent years, excepting the '58 recession, it has upped sales about 10% each year, hopes to do as well in the next decade.

Whatever its actual sales volume, there's little doubt that Amsco is one of the biggest chemical products distributors. The company itself claims to be the biggest seller of aliphatic naphthas.

Humble Start: Amsco got its start in 1923 when a small group of Chicagoans spotted an opportunity in petroleum solvents. At that time, solvents specifications varied enormously among suppliers and even from ship-

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Epoxy chemicals, previously offered by FMC's Becco Chemical Division, are now available from the Chemicals & Plastics Division. The extensive epoxide program begun by Becco is being continued and expanded by Chemicals & Plastics. Seven versatile epoxides are currently offered and others will be available in the near future.

Epoxides are currently finding broad uses in epoxy resin formulations (e.g., as reactive diluents), as specialty solvents, stabilizers, acid scavengers and corrosion inhibitors. Epoxides are valuable intermediates in making perfumes, cosmetics, pharmaceuticals, adhesives and lubricants.

Technical information on the properties, reactions and applications of FMC epoxides is available on request. We would be glad to discuss other epoxy compounds that may be of special interest to you.

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The company set about to determine customer specification requirements and to offer standardized products. And that approach is still the cornerstone of Amsco's sales pitch; the firm claims to be the only company offering petroleum solvents with specifications identical in all areas of the country.

Pure Oil bought into the firm in the '30s, now owns about 78% of Amsco stock. The firm operates independently of Pure Oil and buys much of its requirements from other oil companies.

Amsco distributes east of the Rockies; West Coast sales are handled by 50%-owned Amsco, Western, which functions as a solvents distributor. (Richfield of California owns the remaining stock.)

The company has been moving steadily toward decentralization in recent years. For example, the Atlanta office—rather than the firm's Eastern headquarters in Murray Hill, N.J.—now supervises operations at Charlotte, Atlanta and Memphis. The chief executive offices, including that of the company president, Edward M. Toby, are in Murray Hill. Amsco Chairman Allin Vallentyne directs Midwest operations from Chicago.

Product Mix: Petroleum solvents comprise the bulk of Amsco's line. In order of importance, the major product groups are aliphatic naphthas, aromatic hydrocarbons, intermediate aromatic solvents and paraffinic hydrocarbons.

Biggest product, saleswise, is mineral spirits, termed by Toby "the bread and butter item." It is closely followed by Naphthol Spirits. In aromatic solvents, best-selling items are benzene and xylene, followed by super-high-flash naphtha and Amsco-Solv G.

Amsco keeps a sharp eye on new product possibilities and has often taken the lead in introducing new lines. Examples: Lactol, a replacement for toluene; Textile Spirits, a benzene substitute; Naphthol Spirits, a high-flash material.

Most (60%) of Amsco's sales are made to the protective coatings industry. Rubber and allied industries account for another 15% of its total volume. Vegetable oil extractors, chemical producers and adhesives makers also rank as important customers of the firm.

At the moment, chemicals (esters, ketones, waxes, plasticizers, amines, chlorinated solvents) don't rank large in total volume. This group, says Toby, now accounts for only about 10% of the firm's sales. It's an area, however, in which Amsco hopes to become increasingly active.

Bulk Setup: Water terminal operations form the backbone of the company's physical facilities. Terminals are owned or leased at 20 different locations across the country. Of these, 11 are equipped to "break bulk,"

CW PHOTO—LIONEL CRAWFORD

Amsco's Toby: 'Everyone's a salesman, and that includes me.'

thus provide less-carload-lot deliveries. Toby estimates his firm's storage capacity at some 42 million gal. Terminal operations keep a fleet of about 60 trucks in almost constant use. And the firm also leases several hundred tank cars, charters tankers and inland barges.

Amsco, as Toby puts it, "is not a believer in a big product line." For that reason, the firm carries about 80 basic items in tank storage, represents only about 50 suppliers. The 80 items are generally available on a national basis. In the key New York and Philadelphia areas, however, the product line is much larger.

About 80% of Amsco's sales are what it terms "wholesale"—quantities equal or greater than transport-truck size, carrying a bulk price. The remaining 20% is "retail"—tank-wagon or drum lots that take an l.c.l. price. Chemical products are, for the most

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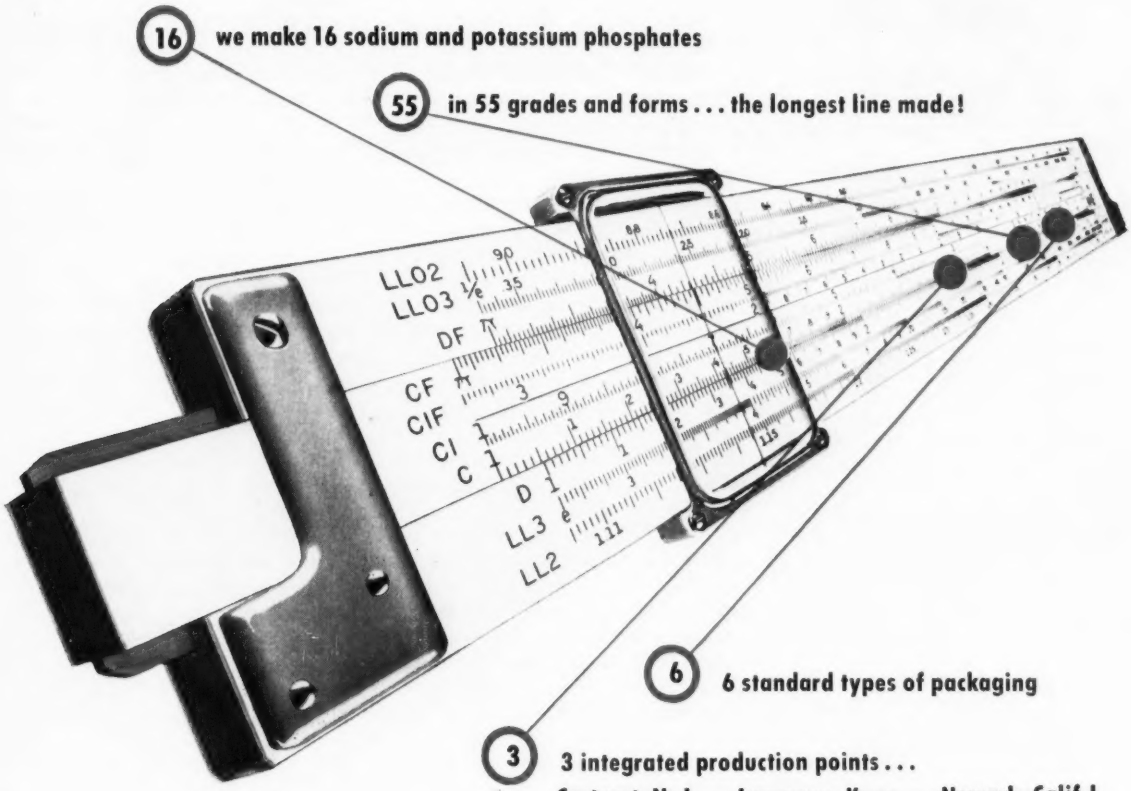
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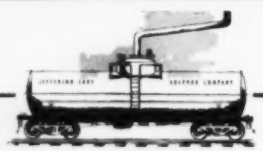

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part, within the company's retail sales classification.

Eastern U.S. firms account for 55% of Amsco's business; Midwest companies, some 34%; West Coast firms, 11%.

Amsco reaches "wholesale" markets directly on a national basis, relies on distributors to service "retail" accounts. Distributors, in fact, figure large in the company's organization; it uses more than 100 single and multi-product distributors.

Sales Approach: "Everyone at Amsco," says Toby, "is a salesman . . . and that includes me." Despite the pressures of a big national business, he still handles several major accounts. Not long ago, he "commuted" to Chicago for 13 weeks in a row.

Toby is a firm believer in "depth selling" and salesman personality. He insists that his sales staffers have close personal relations and knowledge of all people with purchasing influence in major accounts.

This policy has logically led to establishment of "assigned accounts"—customers that salesmen must concentrate on. The firm numbers some 1,000 assigned accounts. Borrowing a leaf from producer sales organizations, it also sells on a national account basis. Accounts of large customers that buy for several plants are supervised by home-office executives and district managers.

In Amsco's sales setup, salesmen have a remarkable degree of authority. They are permitted to meet price competition on the spot. This policy, however, applies only to veteran salesmen in key marketing areas. Generally, the firm follows a conservative pricing policy, aims at "profitable price levels," avoids promiscuous price-cutting.

Credit policies, says Toby, are liberal: "We regard credit as a sales tool." The company is willing to give a credit line to almost anyone (once at least) with but cursory investigation. Bad debt losses run well under 1% of sales.

Service, both delivery and technical, ranks high in Amsco's operations as it does for most distributors. Its numerous terminal facilities and a Teletype network linking major storage points enables the firm to stress next-day delivery service in its sales presentations.

Technical service is carried out by its own labs, those of major suppliers and, to some extent, by the research labs of Pure Oil.

An IBM data system aids in providing tight management control. Salesmen, for example, receive monthly reports showing sales by product, volume and customer. Sales reports are kept to minimum verbiage. Staffers list routine calls, report in detail only when something unusual occurs. It amounts to a "management by exception" approach.

Ahead: Biggest recent problem—and one that is continuing, reports Toby—is the trend to use of latex paints. This has cut sharply into naphtha sales. To a large extent, Amsco has recouped the lost business by seeking new markets and stressing growth areas. Biggest growth areas: adhesives, aliphatic naphtha propellents, paraffinic hydrocarbons for oil extraction.

Attention to these areas, a push for high-profit chemical items that mesh with the firm's distribution capabilities and possible foreign expansion are all on the agenda. That—plus expansion into pipeline operations, Toby tells *CW—should* keep the firm growing at its traditional 10% rate per year, help maintain its place in solvents distribution.

DATA DIGEST

- **Butyl rubber:** Two bulletins, 105-1 and 102-1, give information on resistance of butyl rubber compounds to ozone and fire-retardant hydraulic fluids. Thiokol Chemical Corp. (780 North Clinton Ave., Trenton, N.J.).
- **Acids and anhydrides:** 44-page illustrated brochure has application information, physical data and analytical methods for acetic, propionic and butyric anhydrides and acetic, propionic, butyric, acrylic, crotonic, sorbic, 2-ethylbutyric and 2-ethylhexoic acids. Union Carbide Chemicals Co. (New York).
- **Mineral filler:** Diatomaceous silica fillers are the subject of a new 12-page brochure. It describes chemical properties, density and bulking effects, particle structure, surface area, porosity, absorptiveness, thermal properties. Applications are suggested in a wide range of industries. Mining and Mineral Products Division, Great Lakes Carbon Corp. (612 South Flower St., Los Angeles 17.)

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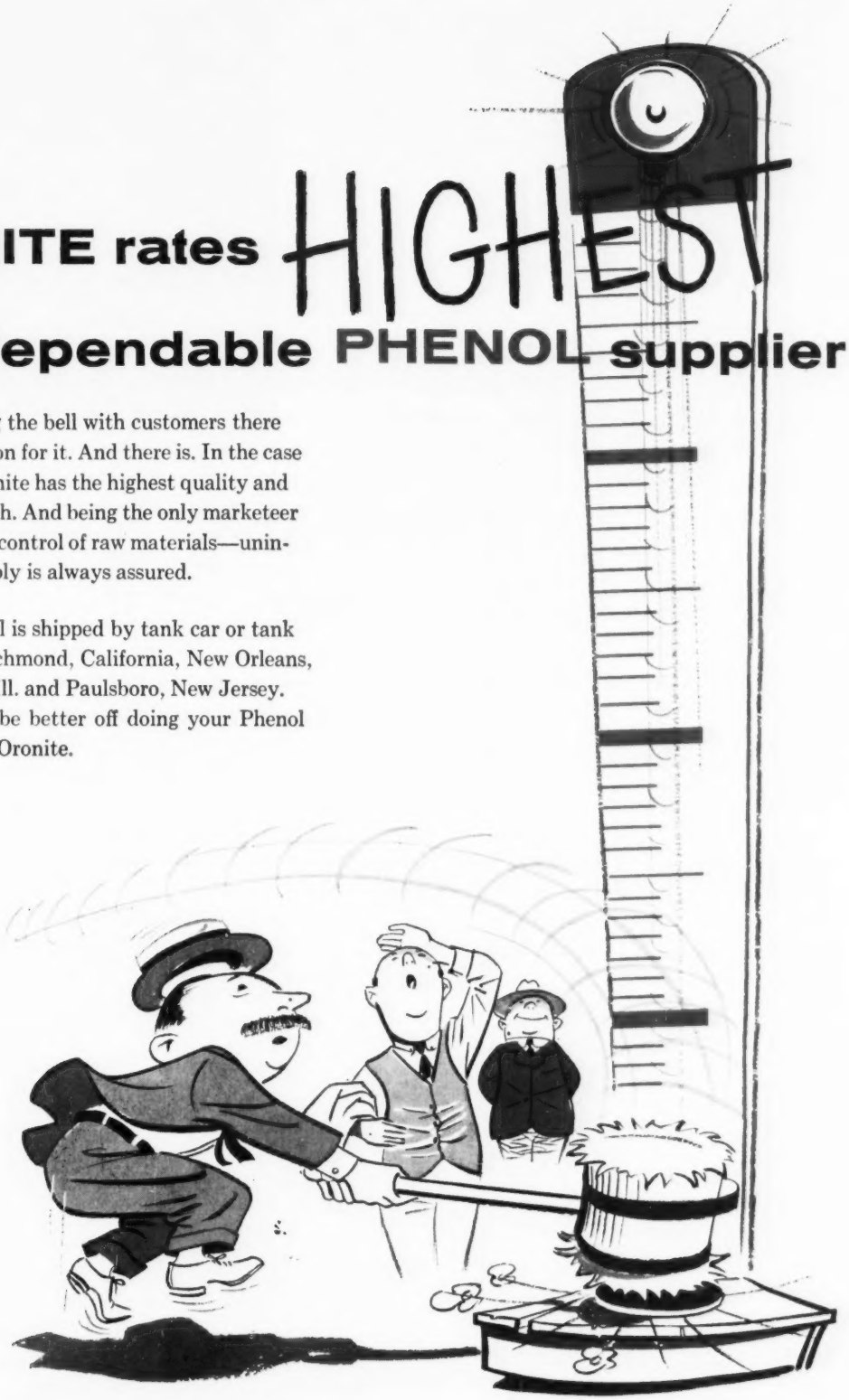

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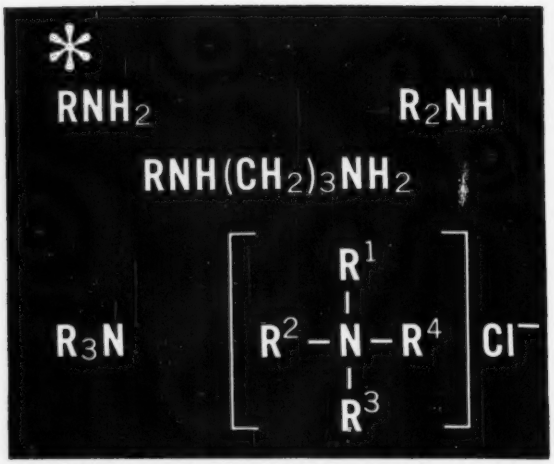

Above left, fatty primary amine; *above right*, fatty secondary amine; *center*, fatty diamine; *lower left*, fatty tertiary amine; *lower right*, fatty quaternary ammonium chloride.

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Product		Primary Amine Content (%) (Minimum)	Amine Number† (Minimum)	Iodine Value
Alamine 4	primary lauryl amine	87	270	2 max.
Alamine 4D	distilled primary lauryl amine	97	294	2 max.
Alamine 6	primary palmityl amine	87	207	3 max.
Alamine 6D	distilled primary palmityl amine	97	222	3 max.
Alamine 11	primary oleyl amine	87	189	70 min.
Alamine 11D	distilled primary oleyl amine	97	203	70 min.
Alamine 21	primary coconut oil amine	87	250	16 max.
Alamine 21D	distilled primary coconut oil amine	97	272	16 max.
Alamine 26	primary tallow amine	87	192	43-50
Alamine 26D	distilled primary tallow amine	97	207	43-50
Alamine H26	primary hydrogenated tallow amine	87	192	6 max.
Alamine H26D	distilled primary hydrogenated tallow amine	97	207	6 max.
Alamine 7	primary stearylamine	87	186	6 max.
Alamine 7D	distilled primary stearylamine	97	202	6 max.
Alamine 33	primary cottonseed oil amine	87	192	65 min.
Alamine 33D	distilled primary cottonseed oil amine	97	207	65 min.
Alamine 34	primary soybean oil amine	87	192	85 min.
Alamine 46	mixed amines	60	150	20 min.

General Mills—FATTY SECONDARY AMINES R_2NH

Product		Secondary Amine Content (%) (Minimum)		Iodine Value
Alamine 221	secondary coconut oil amine	85	—	16 max.
Alamine H226	secondary hydrogenated tallow amine	85	—	12 max.

†mg KOH equivalent to 1 gram of amine

General Mills—N-FATTY 1, 3-PROPYLENE DIAMINES $RNH(CH_2)_3NH_2$

Product & Description	Amine Number	Water Content	Melting Range
Diam 21 N-coco 1, 3-propylene diamine	375 min.	2% max.	20-25°C
Diam 21D Distilled N-coco 1, 3-propylene diamine	390 min.	2% max.	25-30°C
Diam 26 N-tallow 1, 3-propylene diamine	285 min.	2% max.	43-47°C

General Mills—FATTY QUATERNARY AMMONIUM CHLORIDES $RN(CH_3)_3^+Cl^-$ or $R_2N(CH_3)_2^+Cl^-$

Product	Description	Percent Quaternary Ammonium Compound	Percent Sodium Chloride	pH
Aliquat 4	lauryl trimethyl ammonium chloride	48-52	1 max.	9 max.
Aliquat 6	palmityltrimethyl ammonium chloride	48-52	1 max.	9 max.
Aliquat 21	coco trimethyl ammonium chloride	48-52	1 max.	9 max.
Aliquat 26	monotallow trimethyl ammonium chloride	48-52	1 max.	9 max.
Aliquat 221	dicoco dimethyl ammonium chloride	73-77	0.5 max.	9 max.
Aliquat H226	dihydrogenated tallow dimethyl ammonium chloride	73-77	0.5 max.	9 max.
Aliquat 400	1:1 mixture Aliquats 26 and 221	48-52	1 max.	9 max.

General Mills—FATTY AMINE ACETATES $RNH_3^+CH_3COO^-$

Product	Description	Amine Value (Minimum)	Percent Neutralization	Iodine Value
Alamac 21	primary coconut oil amine acetate	191	97-103	10 max.
Alamac 21D	distilled primary coconut oil amine acetate	204	97-103	10 max.
Alamac 26	primary tallow amine acetate	154	97-103	35-45
Alamac 26D	distilled primary tallow amine acetate	164	97-103	35-45
Alamac H26	primary hydrogenated tallow amine acetate	152	97-103	5 max.
Alamac H26D	distilled primary hydrogenated tallow amine acetate	162	97-103	5 max.
Alamac 7D	distilled primary stearylamine acetate	159	97-103	5 max.

General Mills Fatty Nitrogen Chemicals can answer your requirements as:

corrosion inhibitors in crude oil production, oil refining and transportation and in secondary oil recovery. *Diamines and quaternary ammonium compounds* are used extensively in the petroleum industry.

flotation agents in recovery of phosphate, feldspar, potash, mica and quartz ores. *Primary amines* adsorb on the minerals, providing an hydrophobic film that enables attachment to air bubbles, floating minerals to the surface.

mold release agents for hard rubber curing. *Primary amines* speed curing and reduce permeability of hard rubber products such as battery boxes.

textile softeners for both home and commercial laundries. *Quaternary ammonium chlorides* soften fabrics, minimize static, speed the rate of dry, make ironing easier.

petroleum additives in engine fuels, lubricating and fuel oils. *Primary amines* and *diamines* prevent the formation of sludge and color bodies.

And *all* these fatty nitrogen chemicals are now being used in the chemical industry as reactive intermediates.

These are only a few proven applications of Fatty Nitrogen Chemicals. Your own experience and product requirements should suggest countless others. For a closer look at our complete line of on-stream Fatty Nitrogens, see the product specifications on the page at left.

Whether yours is a product or a process, write today for your FREE booklet, Fatty Nitrogen Derivatives.
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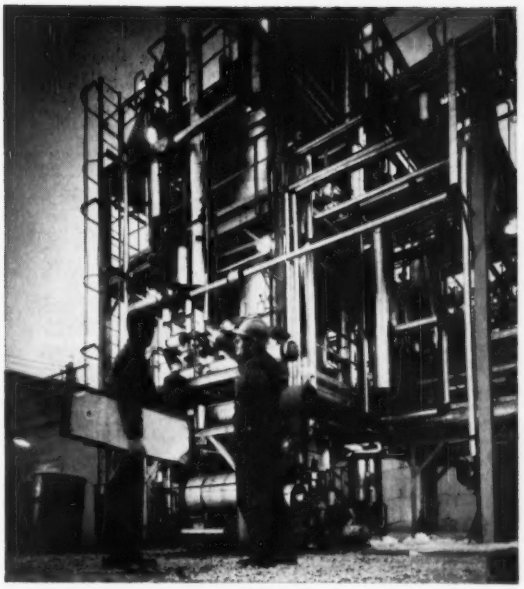

Modern equipment like this is used in one stage of the production of fatty nitrogen chemicals to supply growing industrial demands. Shipped in 4,000 and 8,000 gallon tank cars, in 3,500 gallon tank trucks, and 55 gallon drums, these chemicals are *controlled* for minimum variation and maximum purity.

These key properties make Fatty Nitrogens extremely promising in many industries:

- ☑ SURFACE FILMING—Fatty nitrogen derivatives adsorb on metal as a monomolecular film and protect the metal from corrosive environment.
- ☑ SELECTIVE ADSORPTION—Fatty amines preferentially adsorb on certain non-metallic mineral surface; this surface modification enables the separation of ore components.
- ☑ CHEMICAL REACTIVITY—The fatty nitrogen derivatives are unique building blocks for organic chemical synthesis.
- ☑ SOLUBILITY—The fatty nitrogen derivatives have characteristic solubilities in a wide variety of polar and non-polar solvents.
- ☑ SURFACE ACTIVITY—The fatty nitrogen derivatives are cationic emulsifiers, wetting agents and detergents.
- ☑ BIOCIDAL ACTIVITY—The fatty nitrogen derivatives inactivate certain bacteria, fungi and algae.
- ☑ BASE EXCHANGE—The fatty nitrogen derivatives can replace inorganic ions in clays to make the clays compatible with organic liquids.
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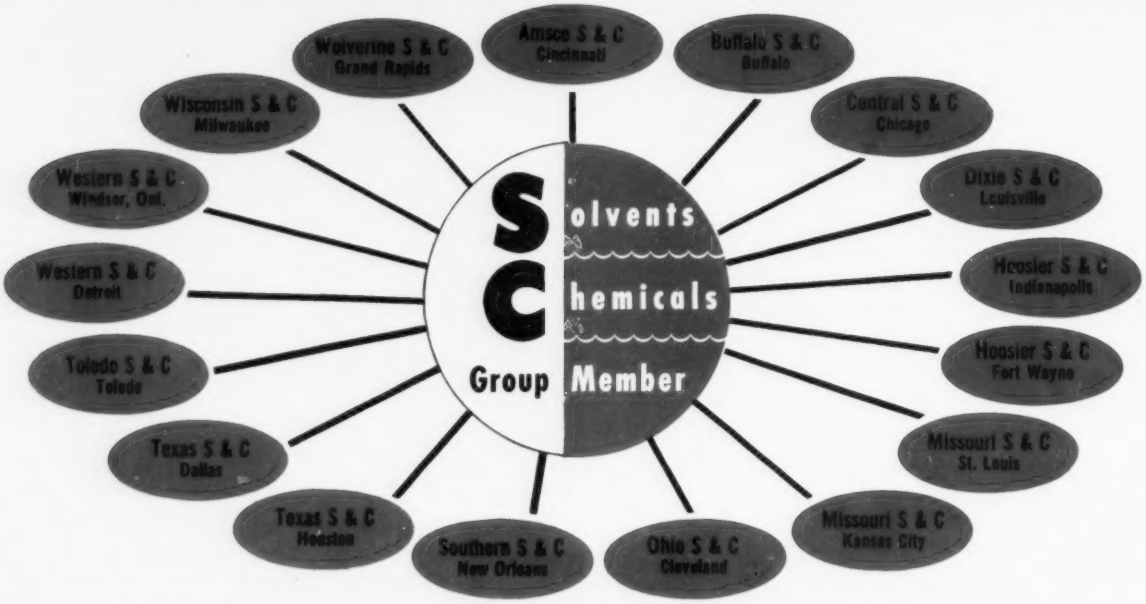

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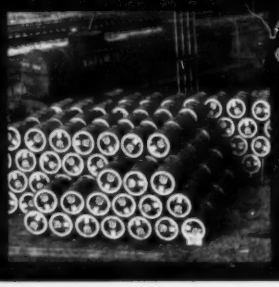

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***Consumer Bulletin* and *Consumer Reports* often provide unhappy reading for specialties makers.**

Just How Important Are Product Raters?

Have specialty makers belled the wrong cat? A CW study of the effect of product ratings published by consumer-testing organizations reveals this week that, contrary to most opinions, there's actually little to hope for or fear from a good or bad rating given by these groups. On the other hand, the long-term welfare of some specialty makers is seriously threatened by the same organizations' advocacy of consumer-oriented, antibusiness legislation.

Consumer-rating magazines are spotlighted this week because specialty products are discussed in the two major U.S. publications that issue those ratings. Consumers Union's researchers, operating out of a converted lens-grinding plant in Mount Vernon, N.Y., put floor products under a glass and reported their findings in the 850,000 copies of the organization's monthly, *Consumer Reports*. Makers of rug-shampooing products were also put to the test. Consumers' Research, which publishes 100,000 copies each month of *Consumer Bulletin*, was taking a steely eyed look at those products from its venerable headquarters in a converted Civil War cannonball factory in Washington, N.J.

Both of these magazines (which claim to have a total readership of over 5 million) have grown steadily in influence since World War II.

Who Gets Hurt? To see what effect, if any, the ratings given by these two

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organizations have on specialty products, *CW* went to companies whose products have been evaluated, asked what the sales reaction has been.

The consensus: a shrug-of-the-shoulders attitude of, "We pay attention to the ratings but they don't seem to affect sales much." While some companies pooh-poohed the influence of these magazines, these same companies nevertheless insisted on anonymity. Here are some of the quotable answers *CW* received:

President Justine Dart of Rexall believes that the influence of these magazines is greater in hard goods than in drug items. Drugstore purchases, he points out, are more casually made. Even when Rexall products get particularly high ratings, the effect on sales is negligible.

Alfred Firestein, director of U.S. marketing for Max Factor, feels that consumer-testing magazines, while probably reporting accurately, do not probe deeply enough and cannot test sufficient numbers, brands and types of products in the cosmetic field to produce meaningful evaluations.

A large proprietary drugmaker's sales manager said, "What the reports say about us is no earth-shaking matter. Naturally we're pleased to have them favorable, but their relatively low circulation — compared with the 175 million or so population in this country — keeps them from being much of a factor in sales."

A large soapmaker's sales manager thinks that the magazines do a good testing job and are reliable in their research opinions, says, "If a product receives a bad rating there's no doubt that damage will be caused." Another soapmaker's spokesman, however, contends that no company could measure, with the yardsticks available, the significance of these reports on sales.

Says one wax maker: "We think consumer-testing magazines do have some effect on sales—but not a tremendous one." Another wax maker thinks that the sales picture would not be altered radically by any rating—good or bad — his products receive. Still, he added, if one of his products got a bad rating, the lab people would be asked forthwith to check what went wrong.

A hair products maker opines that the magazines are interesting, fair and authoritative, and their effects on the public are quite noticeable.

What Went Wrong? Directors of the two consumer-testing organizations talked freely about the response the magazines receive from manufacturers whose products get bad ratings. Mild-mannered Dexter Masters, director of CU, says that in his opinion the magazines are going through the third stage of reaction. At first, he says, there was no response; then came the period characterized by angry letters from sales vice-presidents; now it's usually the technical man who contacts them to discuss testing procedures or to ask help in upgrading a product's rating.

Consumers' Research's blunt-spoken Frederick Schlink agrees, told *CW*, "Rather than an irate letter arriving at CR's headquarters, it's more likely to be a contingent of a company's technical staff looking for some clue to 'where we went wrong'." To illustrate industry's growing concern, Schlink tells of the dishwasher manufacturer who tried several times to "kidnap" one of his poorly designed machines before it could be tested.

If there's no great effect on sales whether a product gets a good or bad rating, it would appear that a specialty maker should take no more than passing notice of these organizations' activities.

Marked Change: But the ratings

What They Say About Consumer Chemicals

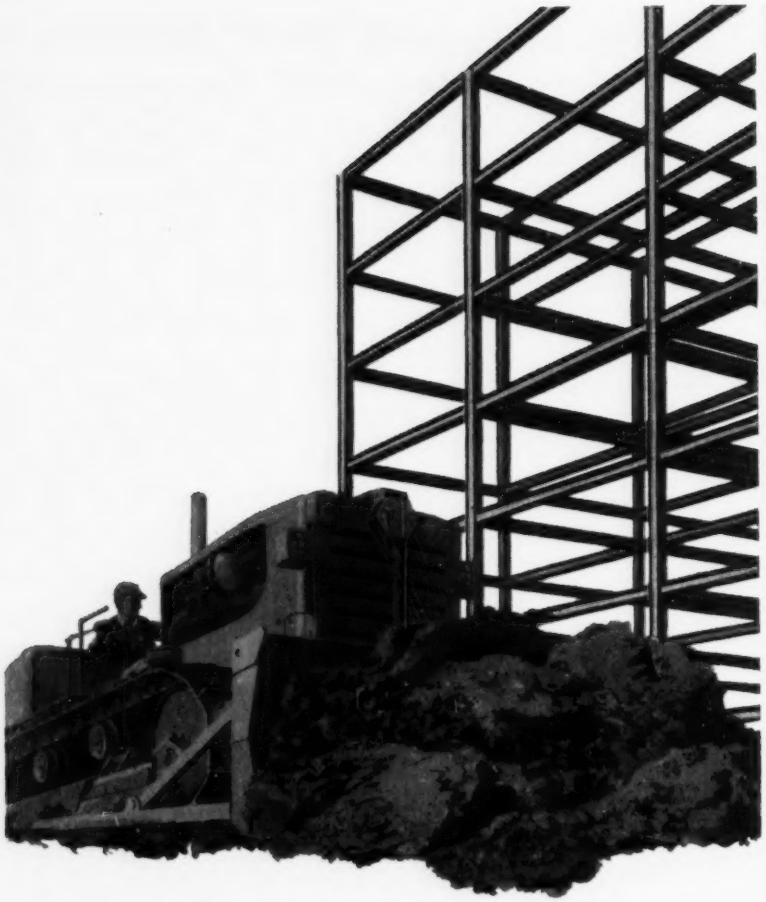
Recent quotes from Consumer Bulletin and Consumer Reports

'Household chemicals are so numerous and in some cases so potentially hazardous that present laws and regulations inadequately provide for warnings on the label . . .' *CB, Aug. '58, p. 33*

'Most food manufacturers put far too much weight on the importance of durability in foods, being unaware of the hazards in the steadily growing use of chemical additives to make food keep a long time . . .' *CB Annual, p. 132*

'The Federal Food, Drug and Cosmetic Act does not require that a cosmetic be proved safe before it is marketed and used . . . the need for improved legislation is obvious.' *CR, July '58, p. 384*

'Consumers should also keep an eye on proposed legislation covering food colors . . . The problem of indiscriminate use in food of untested or unsafe food colors has not been settled by the new additives law.' *CR, Jan. '59, p. 42*



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are only part of the story. There is marked change taking place in the work of the two groups—a change that could affect specialty makers more than good or bad ratings.

There's been a move, clearer with CU than CR thus far, to devote less space to product ratings, more space to broader consumer interests—viz., food and drug laws, product liability, labeling laws, drug pricing, food additives, and legislated standards for such products as brake fluids.

Their consumer orientation may lead to one-sided interpretations of controversial issues, wherein industry's position is glossed over or attacked. But ignoring either of the two organizations' stand on any of these topics, or letting them go unchallenged if biased, would surely work to the detriment of specialty makers. One factor: professional people comprise a large proportion of subscribers to the two magazines. The readers are educated above the average, tend to be members of business and professional groups that can man the big guns when it comes to putting pressure on legislatures.

Men with a Mission: There's sure to be more, rather than less, attention paid to topics like the need for stricter food and drug laws in the future. Both groups feel that the governmental agencies set up to protect consumer interests are not doing a good job.

Schlink ascribes the government's alleged indifference to its recent failure to prosecute successfully some allegedly fraudulent promoters. "The government agencies are back where they were some 30 years ago." he says. "They're afraid that if they attack something, some small businessman's ox will get gored—and they want no part of that sort of situation."

Masters thinks it is not so much scientific wariness as lack of funds that accounts for the agencies' comparative inaction. The lack of funds he ascribes to the absence of a dynamic figure in the agencies. . . "somebody like Ickes, for example."

As long as the two magazines consider themselves champions of consumers' rights, emphasis on legislation will no doubt be intensified.

Influence Grows: Chances are that the magazines will grow in influence. Helping boost circulation will be greater newsstand sales, the ability to advertise (newspapers wouldn't ac-

BRIEFS

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- ☐ Oxalic Acid
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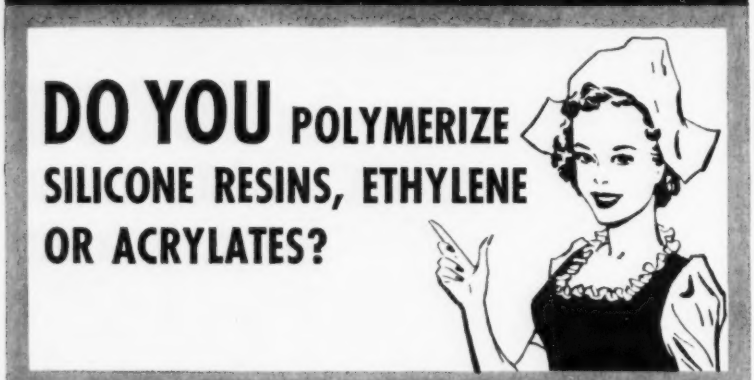

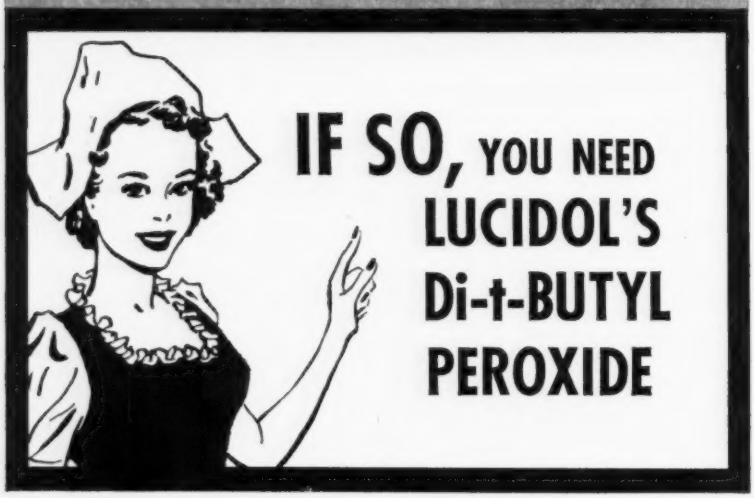

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cept their ads up to a few years ago), the rise of self-service stores (with a concomitant need for more product information), and a higher level of education (increasing their potential readership). Several recent newspaper editorials have been based on studies made by one of the testing organizations, and more are on the way—extending their sphere of influence.

The influence of consumer-education groups like CR and CU will grow on an international scale, too. There are already 40 groups operating in the world. In England, for instance, where strong libel laws would seem to mitigate against the existence of rating magazines, a magazine called *Which?* has been running only a little over a year, already has a circulation of over 100,000 and will change from a quarterly to a monthly in April. Another indication of the growing international scope of this movement: a first meeting of various world groups, in September, which the British, Dutch and U. S. organizations will sponsor in Copenhagen.

There's good reason for product manufacturers to keep an eye on the consumer-testing groups. Some of their watchfulness for the consumer could conceivably lead to ill-advised, unnecessarily onerous legislation, and it's to the specialty maker's advantage to closely watch the watchers.

Blue Paints Resurge

A new Colortrend Report on paint colorants, just released by California Ink Co., Inc. (San Francisco), shows that the blues have it. The long-predicted blue wave has now hit the mass market, and the craze for off-whites has vanished as suddenly as it hit in the spring of '58, says Cal Ink. Here are Colortrend highlights: marked increases in popularity of blues, rusty corals, sandy beige. Turquoise remains in the No. 1 spot, with light-pink second in popularity. Major declines occurred in certain greens, yellow-greens and off-whites.

Although there's no indication that the U.S. housewife is moving back to the '52 deep-tone era, the figures indicate a significant trend to more color strength—especially in the blues, blue-greens, yellows and rust-browns. Colortrend statistics are based on Cal Ink's tubed colorants sales.

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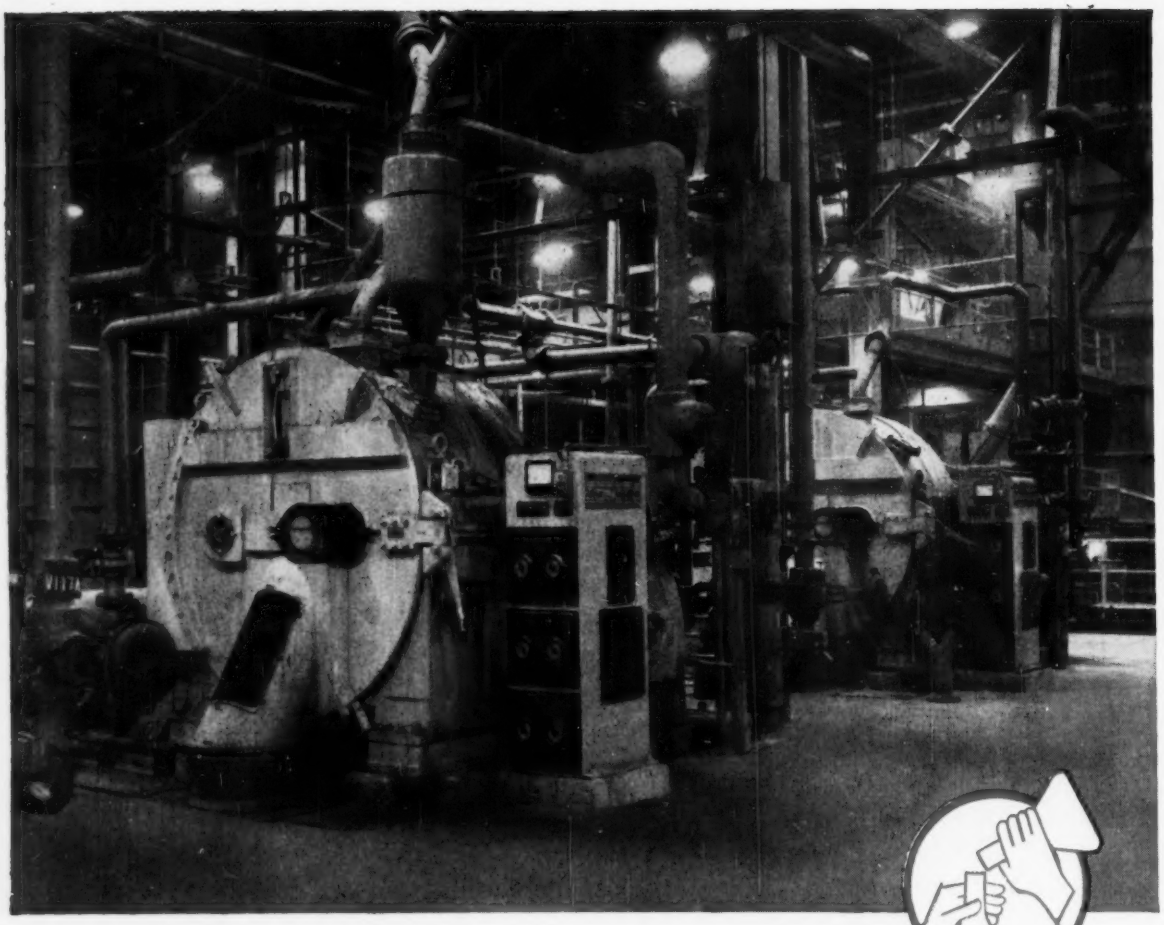

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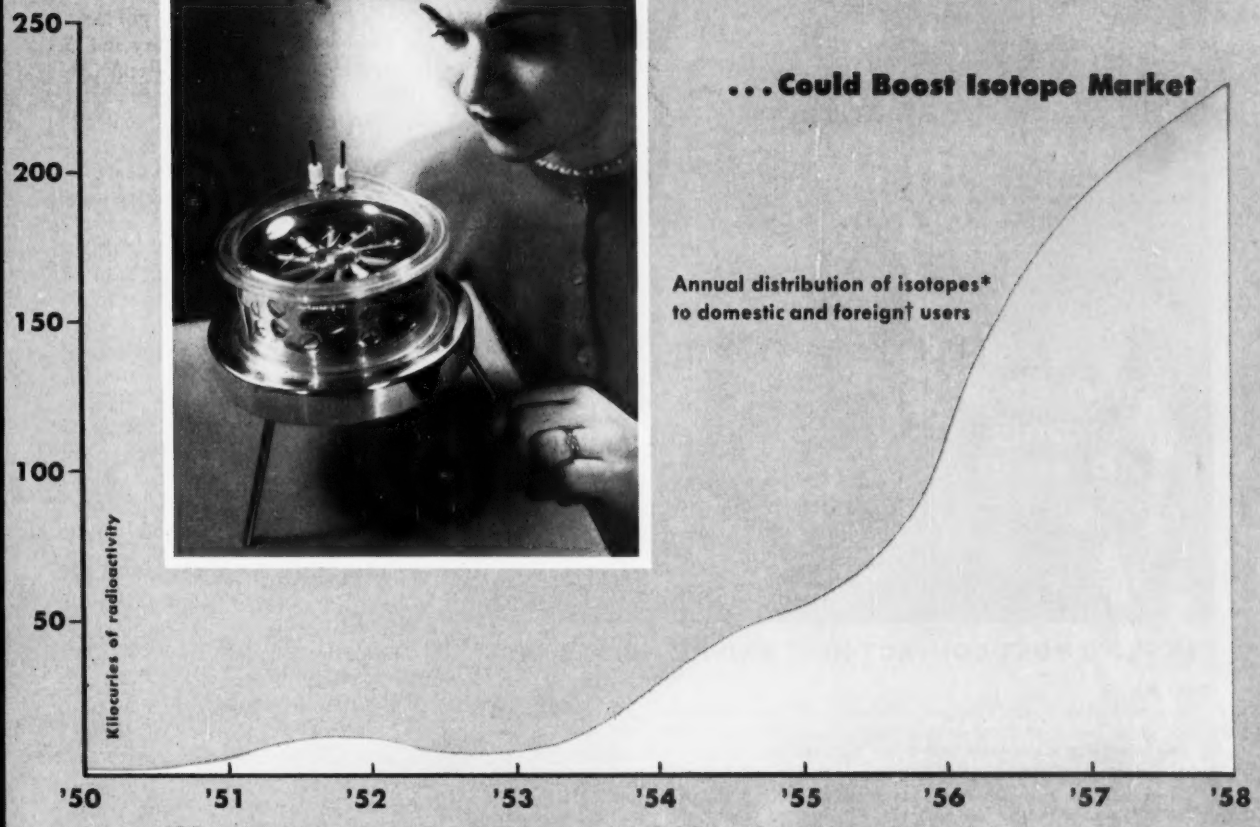
New Midget Electricity Generator

...Could Boost Isotope Market



*Source: AEC semiannual reports on radioisotope shipments from Oak Ridge National Laboratory.
†Data on foreign shipments reported for first time in '58 (estimated for '57).

Sparking New Hope for Isotope Boom

Soaring demand for radioactive isotopes may ascend even more steeply if radioisotope-powered electrical generators fulfill expectations. This week, three of these devices are bidding for attention.

Within days of the recent White House unveiling of the 5-lb. SNAP-III generator (*CW Technology Newsletter, Jan. 24*), the wraps came off two other units designed to convert heat of radioactive decay directly into electric power. One is a thermionic converter developed by General Electric's Atomic Power Equipment Dept.; the other, a strontium-90-powered thermoelectric unit (*CW Technology Newsletter, Feb. 7*) currently under development at The Martin Co. (Baltimore, Md.).

Although these devices are still a long way from being usable—even for such priority applications as missile and satellite power supplies—their proved technical feasibility may boost the commercialization of radioisotope production to a much higher level. At present, all of the isotopes manufactured for research and industrial uses come from AEC sources; and in most of the existing applications, a little material goes a long way. Radioisotopic electrical generators, on the other hand, will require much larger quantities—e.g., 3,000 curies of polonium-210 for the 5-watt SNAP-III unit, more than 200,000 curies of strontium-90 for Martin's proposed 100-watt generating device.

While experimental units, built primarily to demonstrate the feasibility of radioisotopic power generation, justify the use of extremely costly man-made isotopes, the future development of such systems into commercially usable units must be based on more economic methods of producing the isotopic fuels. The obvious solution: recover them from "hot" fuel-reprocessing wastes.

To date, only a few radioisotopes are recovered from this abundant, but hard-to-handle, source. Union Carbide Corp. produces some at the new

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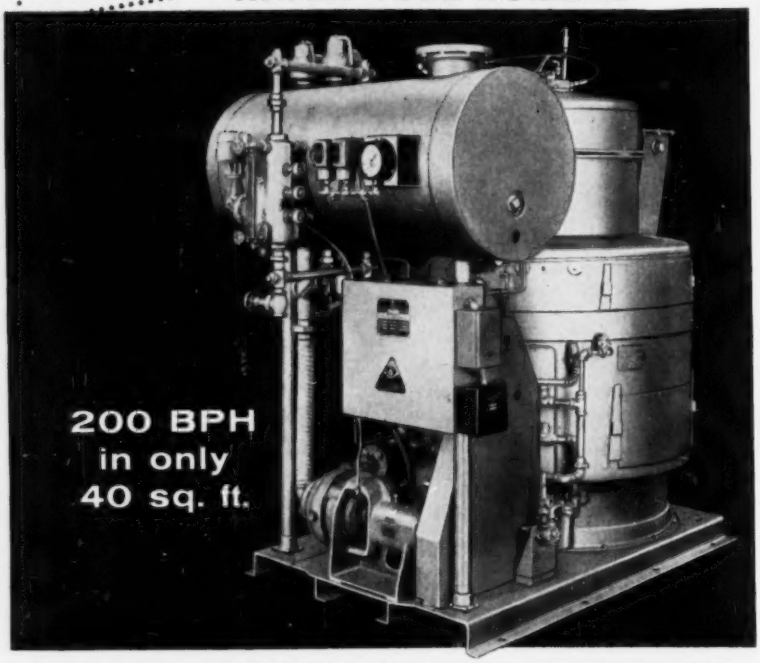

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fission products pilot plant it operates for the AEC at Oak Ridge National Laboratory. Much of the work carried on in this experimental facility is classified, so there are no exact figures on the production of isotopes recovered from waste fission products.

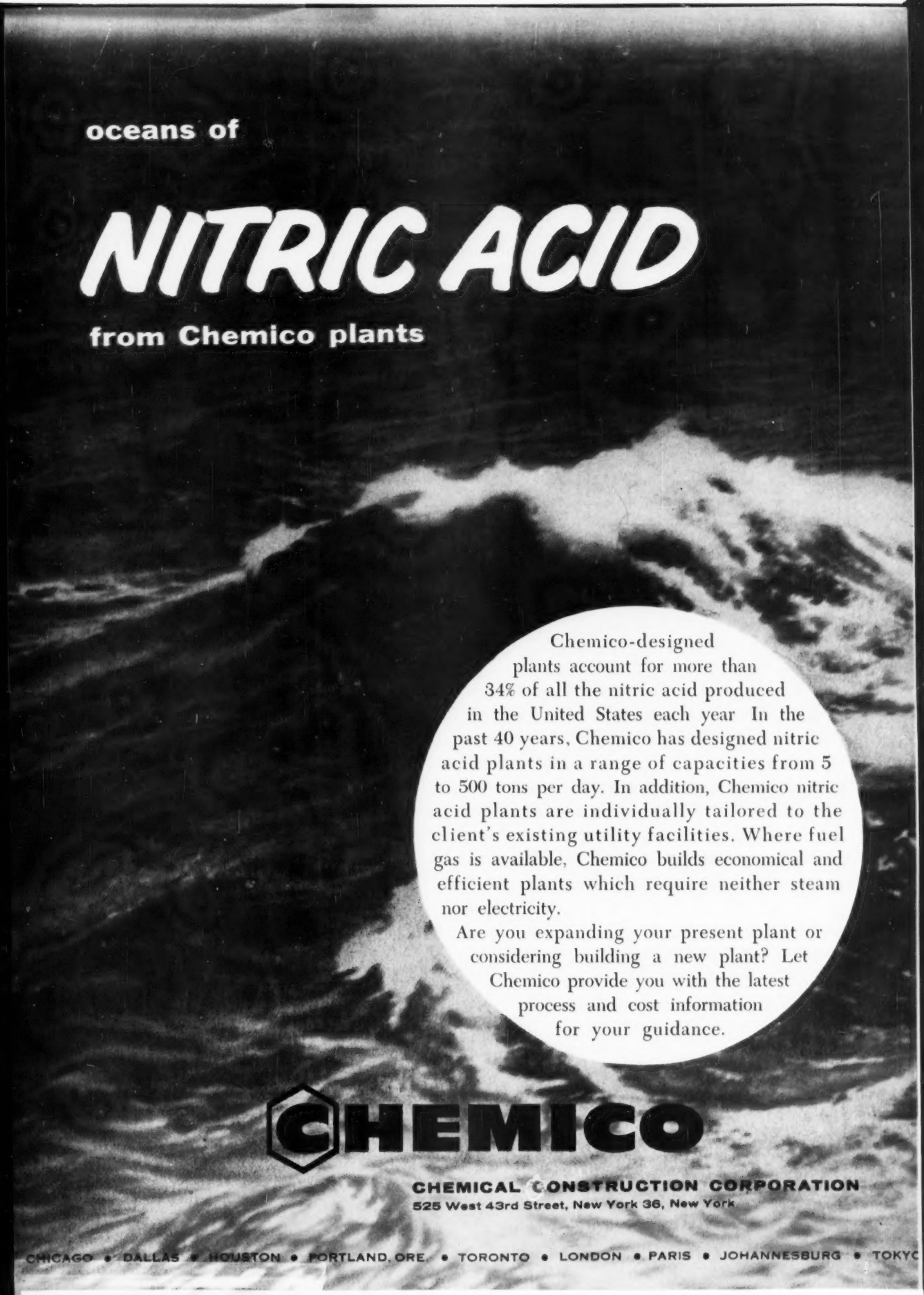
To simplify isotope recovery and to produce materials of high specific activity, suggested recovery processes wouldn't provide sufficient decontamination to permit uncontrolled release of the residues. But it would likely reduce heating problems that complicate long-term storage.

The ORNL production facility hasn't been faced with the problem of turning out quantities as large as those required for the radioisotopic generators, but could handle fairly substantial demands. However, as in all other phases of nonmilitary applications of nuclear materials, AEC would prefer to have private industry take over the large-scale processing operations. So far, nuclear fuel reprocessing has appeared unprofitable. Thus, few private companies have entered the field. But now, the prospect of finding a sizable market for waste by-products may alter the situation.

Boom in Isotopes: The latest report on AEC's isotope activities shows that ORNL distributed a record 228,717 curies of radioisotopes to domestic and foreign users last year. Foreign shipments (reported for the first time in the semiannual report issued last week by AEC) accounted for 78,274 curies—an increase of 178% over '57. Income from foreign sales in '58 amounted to $467,917—up 107% over the previous year. Total sales of all isotopes in '58: almost $2.5 million.

Last year, as previously, cobalt-60 accounted for the largest share of isotope production—a total of 173,235 curies, an increase of 19% over '57. Cobalt-60 is used widely for commercial irradiation systems and in medical teletherapy units. Many of the less-used isotopes showed record increases in '58: promethium shipments totaled 663 curies (up 3,425%); tritium, 39,770 curies (up 653%); strontium-90, 56 curies (up 195%); krypton-85, 1,958 curies (up 73%).

These steady gains reflect a continued growth in both research and industrial uses of isotopes. But they're small, compared with increases that would be needed to supply radioiso-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topic fuel for even a few of the new-style generators.

SNAP-III, for example, requires 3,000 curies of polonium-210 to provide 5 watts of electrical power (actually, only a half charge of 1,500 curies was used in the demonstration unit). And due to the relatively short half-life (138 days) of polonium-210, the fuel charge would have to be replaced fairly often to maintain a useful power-output level.

By utilizing radioisotopes that have longer half-lives—e.g., strontium-90 (28 years)—power generators could operate for as long as 10 years without servicing or refueling. But this long decay time is the very property that makes long-half-life isotopes difficult to handle. And the production of multikilocurie quantities from fuel-eprocessing wastes would require a arge investment in "hot" processing facilities.

Hazards Locked In: Contrary to the "scare" publicity that followed the unveiling of SNAP-III, there's little danger of radiation hazards arising from radioisotopic electrical generators. A primary objective of Martin's development work on the new devices has been the "fixing" of isotopic fuel in a form that would prevent scattering of the hazardous material in the event of an equipment failure. Likeliest prospects: ceramics or cermets.

To date, Martin's work on the strontium-powered system has involved only nonradioactive material that has the same chemical properties as strontium-90 but none of the hazard. Of the several compounds studied, Martin reports that strontium hexaboride looks most promising. This compound exhibits very good stability and insolubility—it remains solid at temperatures to 4055 F, is so insoluble that crystals are normally washed with boiling hydrochloric and sulfuric acid as part of the refining process.

Future Development: Just how long it will take to develop practical uses for radioisotopic electrical generators is anybody's guess. Best bet is that they'll find application first in missiles and satellites, where their weight advantage over conventional batteries will offset the high cost of prototype units. SNAP-III, for example, has a power-producing capacity (over two half-lives) equal to that of 1,450 lbs. of nickel-cadmium batteries.

General Electric's compact atomic generator is also designed for a high ratio of power to weight. The device demonstrated at GE's Vallecitos Atomic Laboratory indicated that a power pack weighing less than 25 lbs. could provide 100 watts of electricity for more than a year.

Heart of GE's radioisotopic generator is a thermionic converter that employs two small discs to produce an electric current when heat causes electrons to "boil" off a metal surface. (Systems used by Martin employ highly efficient thermocouples of a special lead telluride compound to convert heat of radioactive decay into electricity.) Radioactive gold was used as the fuel in GE's test, but longer-lived radioisotopes such as cerium-144 have also been considered. With further development, GE predicts, a radioisotope thermionic converter capable of producing several hundred watts of power could be ready for use in one to two years.

Military applications of radioisotopic generators to provide small amounts of electrical power at remote field installations would be a logical second step. Proposed uses for the 100-watt, strontium-90-powered units include remote weather stations, aircraft warning beacons, sea marker buoys and other unattended power sources where long life and reliability are vital factors.

Plenty of Fuel: The growing accumulation of waste fission products—particularly the long-half-life nuclides—is a worrisome problem. Witnesses in recent Congressional hearings termed as "vital" the need for better methods of nuclear waste disposal—not only for reasons of health and safety but also to reduce fuel costs to commercial nuclear power plants.

Martin scientists estimate that by 1975 normal radioactive waste products of the nation's nuclear energy industry will be sufficient to supply 50 million watts of heat. At a conversion efficiency of 5%, radioisotopic generators could turn this heat into 2.5 million watts of electrical power.

It's unlikely that even large-scale production of radioisotopic fuel would make more than a slight dent in the rapidly growing stockpile of nuclear wastes. But the prospect of recovering salable isotope by-products is a factor for chemical processors to consider in any reappraisal of commercial fuel-reprocessing plans.

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scope IN PLATE CONSTRUCTION FOR ALCOA AT POINT COMFORT, TEXAS

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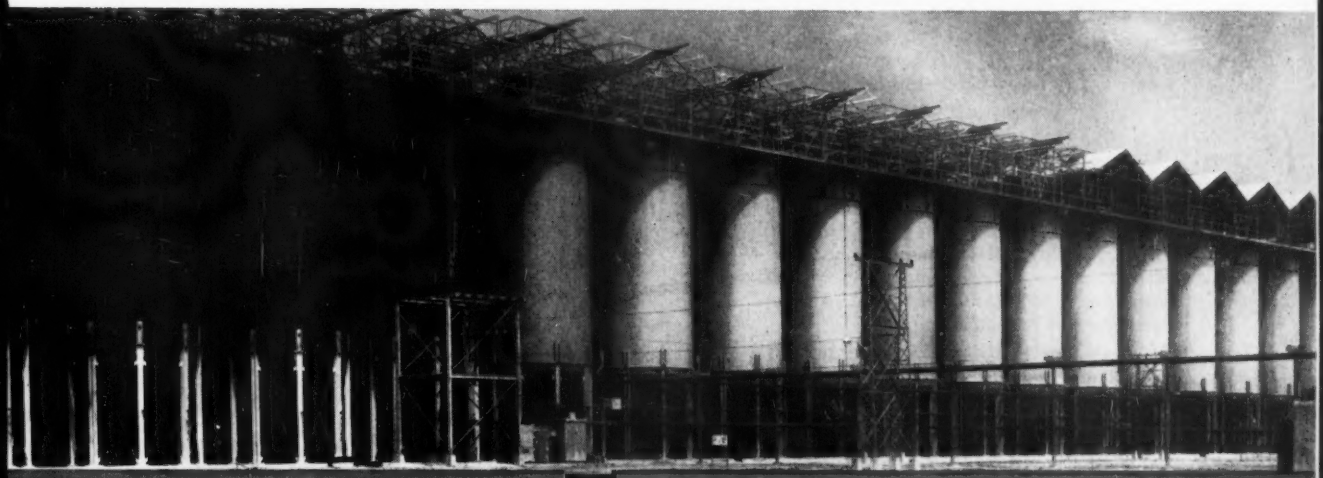
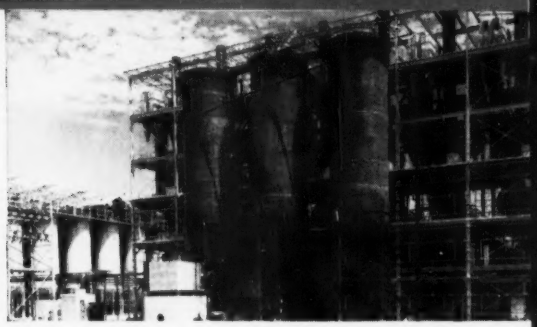


Elevated precipitators—a few of 144



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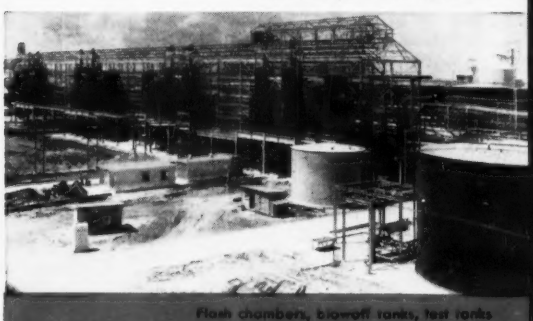

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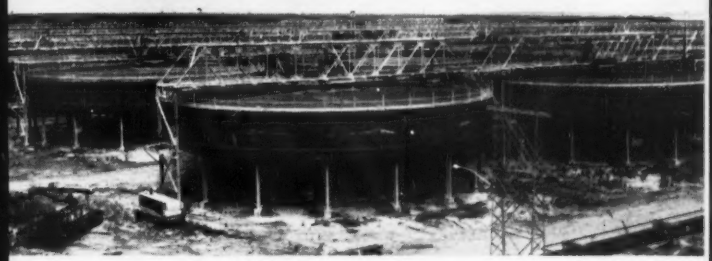

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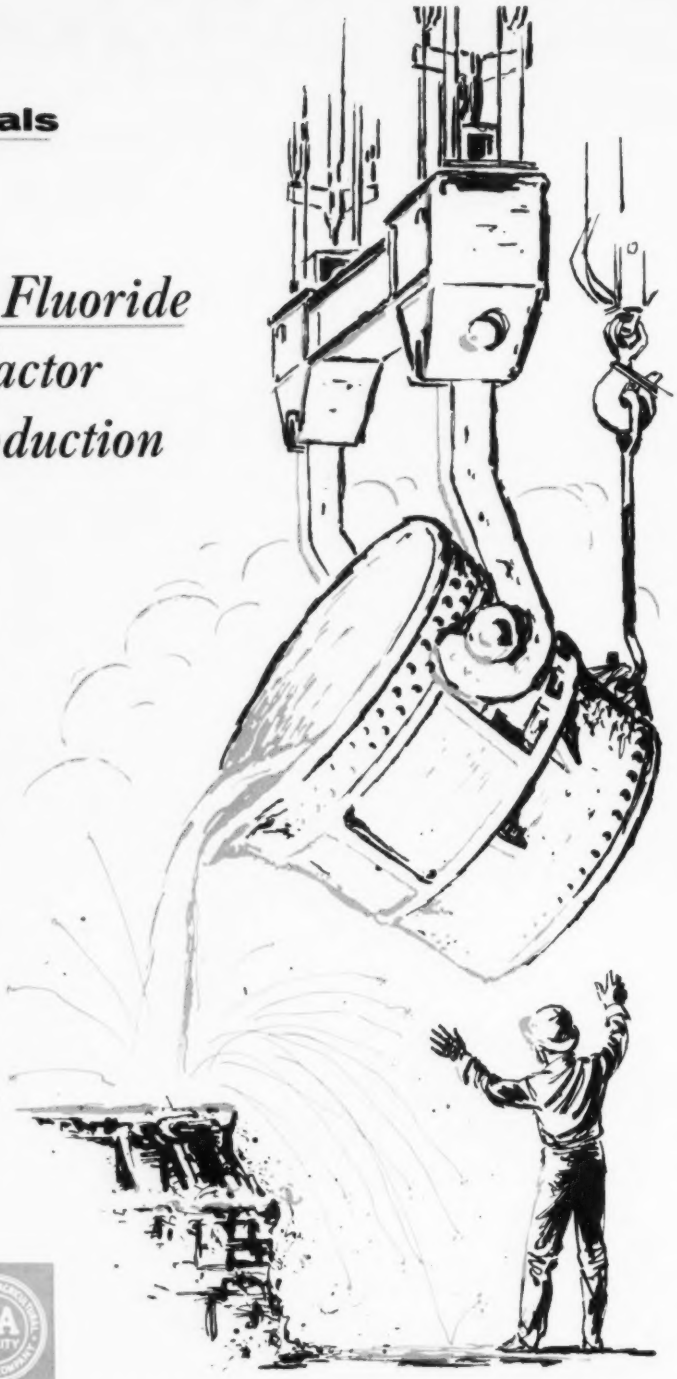

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Technology
Newsletter

CHEMICAL WEEK
February 14, 1959

Production of acrylonitrile using a brand-new process is planned by Standard Oil of Ohio. The plant will be built at Lima; production is scheduled for early '60. Concerning size, Sohio says it's a "multimillion-dollar" project, will employ 120. And all it will say about the process is that it was developed at the Sohio research center in Cleveland and that it uses propylene and ammonia and gives acrylonitrile as a commercial by-product.

Catalytic air oxidation of propylene to acrolein, however, is a good bet as the first step in the process.

There's a nice piece of chemistry involved in getting from acrolein to acrylonitrile, and it will take a nice piece of engineering to make it work. Acrolein could, of course, be oxidized to acrylic acid, then ammoniated. The ammonium salt could then be converted into acrylonitrile. This, however, is the least likely route.

More probable is that Sohio reacts the acrolein directly with ammonia. The normal product of that reaction would be an acrolein-ammonia complex, or a ringed trimer. The former could be converted into acrylonitrile by splitting off hydrogen and a molecule of water. The trimer could be dehydrogenated into acrylonitrile. A good bet, however, is that Sohio has found a way of producing the acrylonitrile directly from acrolein and ammonia. Distillers Ltd. has done it in liquid phase; Sohio, which says its work is entirely original, may have a vapor-phase route.

This isn't, of course, the first attempt to make acrylonitrile from propylene. Present production is based on acetylene (Cyanamid, Monsanto, Goodrich) and ethylene oxide (Carbide). But Escambia developed a process for oxidizing propylene with nitrogen tetroxide to produce lactic acid *(CW Technology Newsletter, Aug. 23, '58)*. This could be ammoniated and then dehydrated into acrylonitrile. Du Pont previously developed a propylene-to-acrylonitrile process using nitric oxide.

Oil firms have showed a previous interest, too, in using propylene and ammonia as raw materials for acrylonitrile. Socony-Vacuum (now Socony Mobil) received a number of patents on production of mixed nitriles from lower hydrocarbons, including olefins (U.S. 2,450,636 through 2,450,642, and 2,450,675 through 2,450,678). And Sinclair developed a process for making propyl nitrile from propylene and ammonia (U.S. Patent 2,381,709).

Where will the product go? That's the question that's baffling the trade. The minimum economic size for an acrylonitrile plant is considered to be 25 million lbs./year, which would be ample to supply the rubber industry's needs—leaving only the fiber business as the likely customer. And **Du Pont is the only major producer of an acrylic fiber from noncaptive acrylonitrile.**

A new process for making anthraquinone is the heart of a new multimillion-dollar plant that will double American Cyanamid's capacity of the dye intermediate at its Bound Brook, N.J., facilities by late '59. American Cyanamid says the plant will make the company the country's first commercial producer of naphthoquinone, and provide it with additional capacity for methylanthraquinone and phthalic anhydride (one of the reactants, with benzene, in the conventional route to anthraquinone).

Key to the process—developed in the company's research labs—is direct oxidation of naphthalene in a fixed-bed catalytic converter. Although the details aren't spelled out, one way to get anthraquinone from naphthoquinone is by condensation with butadiene.

•

New ultrahigh-temperature products for atomic energy, electronic and missile applications will be readied for full-scale commercial production in a $750,000 pilot plant soon to be built at The Carborundum Co.'s Niagara Falls, N.Y., research center. The company is now letting contracts for the new facility, expects to have it ready to go in 9-12 months. Products to be piloted include Carborundum's KT and GRB grades of silicon carbide, boron nitride and other new materials now being developed to withstand high temperatures and corrosive atmospheres.

•

Two new grades of epoxidized soybean oil will be marketed this week by General Mills. The company hopes the new materials will challenge the current dominance by Rohm & Haas and Archer-Daniels-Midland of the 20-25-million-lbs./year epoxy oil market. These oils, used primarily as PVC stabilizer-plasticizers, currently sell at 33¼-35¼¢/lb. in tank-car lots, depending on epoxy content. GM's materials (EpoxyGen-90 and EpoxyGen-IP) will sell at the same price, but, the company reports, these materials will feature up to 10% higher epoxy content, up to 50% less impurities, up to 50% lower viscosity and a markedly lighter color.

The materials are produced by GM's new process for epoxidizing unsaturated vegetable oils and fatty esters, which received its first large-scale test in a commercial plant in Minneapolis. A second plant is due onstream next year. Features of the process, according to GM, are use of a novel catalyst, improvements in the cleanup and purification stages of the operation, and use of a specially prepared, unadulterated soybean oil as raw material.

Use of the higher epoxy-containing oils allows more of the oil to be milled with resin; compounders can turn out products with 20-40% greater heat stability. However, vinyls aren't the only market GM is gunning for. Another: a promising application of epoxy oil as part of the vehicle in alkyd resin-type paints.

•

A pilot plant for concerting ore into sponge iron by the H-Iron process *(CW Technology Newsletter, March 31, '56, p. 65)* is coming soon to the West Coast. Bethlehem Pacific Coast Steel Corp. has filed construction plans with the Los Angeles air-pollution control district for an outdoor unit engineered by Hydrocarbon Research, Inc.

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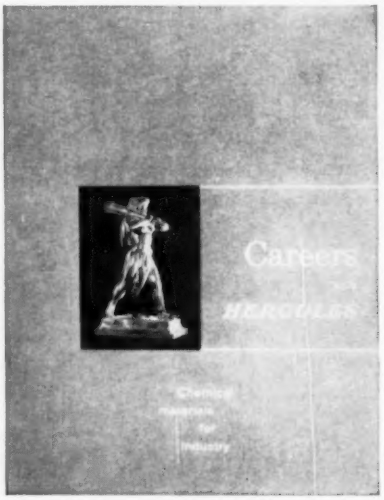

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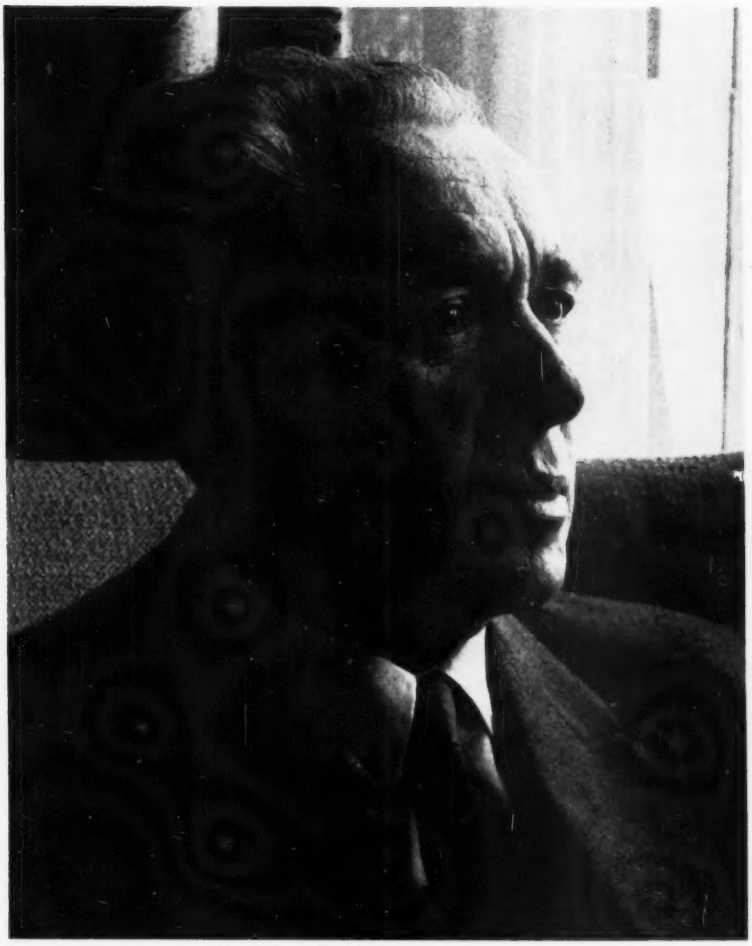

Montecatini's Natta sees bright prospects for new polymers.

Championing the Isotactics

Polymer researchers are taking a speculative look at four new reports this week—the work of Prof. Giulio Natta, Montecatini consultant, and staffers at Du Pont, Standard Oil of Indiana and Phillips Petroleum Co.

The reports* cover work on stereospecific polymers (polymers that feature precise regulation of molecular weight and distribution) and offer not only a lode of technological information, but also clues on which research areas these companies are stressing for potential profits.

Both the Natta and Phillips papers show a strong interest in sterically pure *cis*-1,4-polybutadiene as a material for tires.

Natta describes this product as the "nearest to *cis*-1,4-polyisoprene (i.e., to natural rubber) in elastic properties," but describes as "enormous" the influence of steric purity on its properties.

But he also makes the point, regarding the use of polybutadiene, that "high-molecular-weight polymers are difficult to process and difficult to depolymerize by thermal or mechanical treatments. It is now possible to regulate the molecular weight directly in the polymerization step and also to achieve a planned distribution of the molecular weights."

The Phillips paper recalls that "until the advent of ordered polymerization, no synthetic substitute [for natural rubber] was available to provide a stable independent supply in quantity sufficient to meet the predicted needs of the future," and that the superior hysteresis properties of low heat buildup and high resilience characteristic of natural rubber have been duplicated in *cis*-polyisoprene (synthetic natural rubber). "This same combination of low heat buildup and high resilience is found in *cis*-polybutadiene," the report states. "This elastomer is of particular interest because it is made from an abundant supply of polymerization-grade butadiene."

Natta's paper, the most general in scope, of the four, contains a variety of pungent observations and disclosures. He decries erroneous reference to "isotactic polyethylene," for example, explaining that "linear polyethylene cannot be isotactic since it does not contain regular sequences of asymmetric carbon atoms." He also points out that isotacticity is a property depending only on the steric structure of the main chain and does not necessarily have any relation to crystallinity.

A highlight of the Natta paper, in the opinion of polymer experts, is his mention of the preparation of polymers from optically active monomers by Professor Pino at the University of Pisa. Says Natta, "Starting from optically active olefins, polymers were obtained having a higher crystallinity than those obtained by racemic monomers and a different melting temperature. The optical activity of these polymers is very much higher than that of the corresponding monomers." Significance: a budding new field for scientific investigation.

Du Pont's careful determination of the properties of linear polyethylene and polypropylene, described at the New York meeting, has a different connotation for some observers. Du Pont may be hopeful, they feel, of snaring basic polypropylene patents; repeating its earlier patent coup on low-pressure polyethylene (*CW, Dec. 28, '57, p. 25*). States the report, the relationship of polypropylene to polyethylene "is of keen interest with respect to isotactic polypropylene, since this is the variety of polypropylene of

*Presented at the recent 15th annual technical conference of the Society of Plastics Engineers, Inc., in New York.

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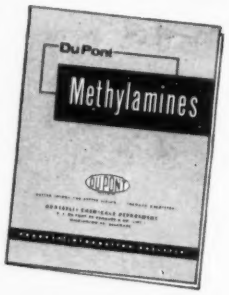

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BETTER THINGS FOR BETTER LIVING
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most promise to the plastics engineer."

From the Indiana Standard report, however, it's plain that Du Pont and other aspirants to isotactic polypropylene patent honors are in for a tussle. Authors, Indiana Standard's A.A. Harban, Edmund Field and H.N. Friedlander, open their remarks this way: "In the 1940s, it was discovered in our laboratories that tough, rigid polyethylene can be produced with preformed solid catalysts. Research in the fields of polymerization and catalysis has since broadened the original discovery considerably. Now, ethylene, propylene, higher α-olefins, diolefins and mixtures of them will polymerize to a broad range of plastic and elastomeric materials by means of a large number of related catalyst systems."

In optical activity, a budding field for further polymer progress.

The paper discusses both suspension and solution polymerizations built around such catalysts as molybdenum oxide, cobalt molybdate and other metal molybdates, supported on alumina, titania or zirconia.

Activity of these catalysts can be "greatly increased," state the authors, "by such promoters as sodium, calcium hydride, lithium, aluminum hydride and aluminum alkyls.

Just where the new, tailored polymers will find greatest use or what processes will dominate their manufacture is still anybody's conjecture. But, as evidenced by the wealth of technology in the new reports, researchers aren't letting up in their drive to find still newer and better stereospecific polymer versions.

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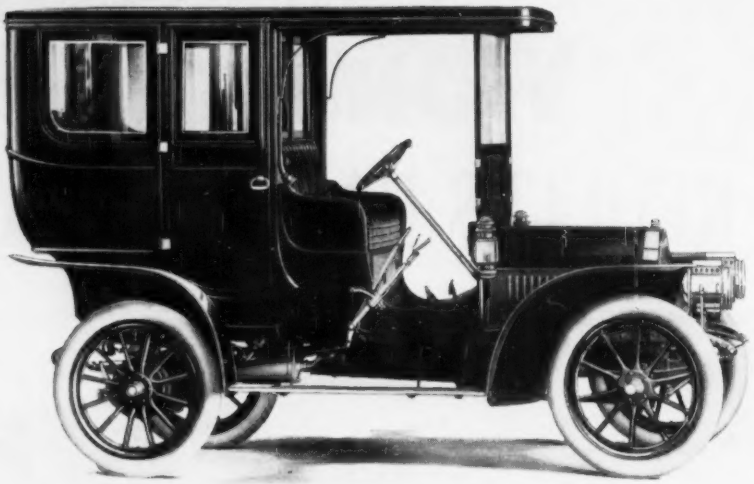

1908 CADILLAC, first car by General Motors, had small window area.

FUTURE CARS now taking shape on drawing boards have glass top.

Glass to Build Tomorrow's Cars

The trend toward larger and more drastically curved automobile windshields presents a challenge to glass and plastics manufacturers: to strengthen glass to the point where it can serve as a structural member of the auto. Most promising approach is via better plastic laminating materials to increase the strength of safety glass sandwiches.

A good structural glass would enhance the appearance of future generations of autos—and expand the market (more than 196 million sq. ft. in '57) for automotive glass.

George Watkins, director of research at Libbey-Owens-Ford Glass Co., in a recent paper points out that "present plastic polyvinyl butyral used in laminating safety glass is thermoplastic in nature, was designed to give maximum impact resistance at normal temperatures." But as temperature increases the plastic loses its strength due to increased plasticity; at low temperatures, it becomes brittle, loses impact resistance.

Commenting on Watkins paper, Russell Whittemore, director of product development at Pittsburgh Plate Glass Co., states that "increased strength will mean increased uses." He thinks that butyral is potentially the ideal substance for the job, that it "may be improved."

Car makers have varied opinions on how to improve safety glass strength. L. W. Parr of Chrysler says, "An interlayer providing greater strength and less sensitive to temperature is needed (may lead to) better fracture and puncture resistance," which is desired by all concerned.

Philip Johnson, engineer in charge of the physical testing lab at General Motor's Fisher Body division, claims that glass in present-day cars already furnishes an appreciable part of the structural support, even has a great damping effect on the ride and the shake of the car.

But, he says, with a trend toward greater glass area the glass will be "worked" more and more.

Du Pont and Monsanto—the major U.S. producers of polyvinyl butyral film (Monsanto gets its resin from Shawinigan Resins) used in safety glass—both report that they are looking for ways to improve butyral. But both claim they are still awaiting new criteria for a better new interlayer material from glass or auto makers.

CHEMICALS OUTLOOK

February, 1959

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

PURECAL O IMPROVES FINISH OF COATED BOXBOARD

Reports from boxboard-coating mills indicate that the incorporation of Purecal* O in the coating formula improves finish, brightness, and printability. Mill runs have shown that 20% to 30% Purecal O in the formula will give improved gloss and ink hold-out, higher brightness, and greater smoothness of the calendered board.

Purecal O can also be used as a partial replacement for titanium dioxide in the coating color without loss in dry opacity or hiding power. This use results in improved brightness and finish at substantially reduced pigment cost. In general the replacement of 5-10 parts of titanium dioxide with 12-25 parts of Purecal O will result in equivalent dry hiding with a 2-3 point gain in brightness.

Purecal O is Wyandotte's agglomerate-free precipitated calcium carbonate. Its particle size of 0.15 micron makes Purecal O effective in providing brightness and finish without loss of opacity common in smaller particle sizes.

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Wyandotte's new series of Pluracol* TP triols are permitting urethane-foam manufacturers to achieve a wider range of desirable physical properties. The advantages gained include increased load-bearing characteristics and the attainment of lower compression-set values than those obtained with straight polyether diol-based foams.

Pluracol TP triols are propylene oxide adducts of trimethylolpropane. The higher molecular weight triols produce flexible foams, while the lower molecular weight triols produce semi-rigid to rigid foams.

A technical paper covering this work was presented to the Society of Plastic Engineers, Inc. at their 15th Annual Technical Conference in New York on January 29, 1959. The paper, entitled "The Use of Polyether Triols in Urethane Foams", was prepared by R. K. Seizinger, S. Davis, J. M. McClellan, and K. C. Frisch.

For information on these Pluracol triols — or for further details on the use of Purecal O in coated boxboard — just write us on your company letterhead. Address inquiries to Department CO for prompt attention.

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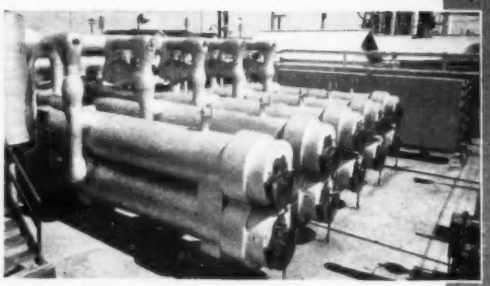

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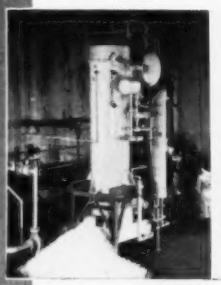

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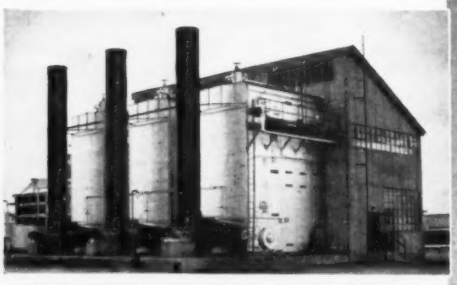

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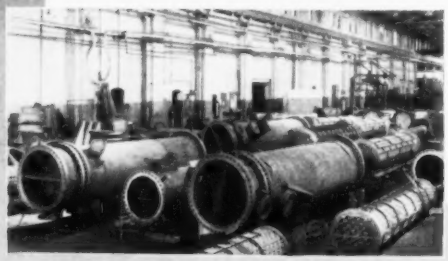

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Market Newsletter

CHEMICAL WEEK
February 14, 1959

The Russians haven't really cut their tin exports as a result of the agreement limiting to 13,500 tons the '59 Communist exports of the metal to Western nations (*CW Market Newsletters, Jan. 31 and Feb. 7*). Their sales would have amounted to about this in any case. Hence, Washington tin experts and economists feel that the world tin situation will get better as a result of improving U.S. and world markets, rather than because of the agreements with Russia.

But there's one significant aspect of the agreement. It was pretty carefully drawn to include Chinese as well as Russian tin. Unconfirmed reports were that it was Chinese—not Russian—tin that hurt world markets in '58.

Washington tin experts agree that the International Tin Council will keep its 20,000-tons/quarter production quotas in effect for another period after expiration at the end of March. Others, however, aren't sure that Malayan and Bolivian producers can be held in line.

Meanwhile, there's nothing new on prospects of the U.S. joining the council. State Dept. people maintain a very strict hands-off policy, and few observers see any reason for a change.

•

U.S. primary magnesium ingot output slumped 62% in '58. Total production: 30,096 tons, down from 78,865 tons in '57. Shipments of ingot probably topped output 25%. Meanwhile, shipments of wrought magnesium products dropped 15%, to 9,343 tons, from 10,959 tons in '57.

Although the huge cutbacks suggest a decidedly unhappy situation, the official industry outlook is optimistic. The condition is labeled "not undesirable" by the Magnesium Assn.—which reported the year-end figures. Reasons: wrought product shipments in '58 have shown uptrends well above the average for the last half of '57, when shipments fell below 600 tons in one month. Adds the association, "It is generally recognized that the low production of primary [magnesium] reflects the determination of Dow Chemical Co. to reduce inventory."

Despite current oversupplies, Dow spokesmen appear confident about the future of magnesium; for example, Vice-President Calvin Campbell recently assured Washington investment analysts that magnesium will provide aluminum with increased competition "in the not too distant future."

It's certain that the hard-pressed U.S. aluminum business won't give up any of its markets without a hard fight. But even in this there's a bright spot for magnesium: as consumption of aluminum alloys increases, magnesium use grows. It's used as an alloying metal.

The U.S. tire-cord market is about $275 million/year—not $75 million, as reported in last week's Market Newsletter. It was a typographical error.

•

A 20-25% boost of ammonia capacity has upped potential output at Southern Nitrogen's Savannah plant to original design capacity (undisclosed); bigger captive needs (see Business Newsletter) spurred the expansion despite current general overabundance of ammonia.

Other recent expansions by Southern include installation of urea production facilities and limestone handling equipment, which permits making ammonium nitrate-limestone fertilizer containing 20.5% nitrogen.

•

Synthetic vitamin prices nosed down again last week, but there's differing opinion about the reason. Hoffmann-La Roche—which initiated the cuts by reducing vitamin B_1, B_2, B_6, and E tabs 10-25%—attributes the action to: (1) the firm's over-all plan to increase vitamin consumption by opening more outlets; (2) reduced production costs resulting from improved processing methods.

But other U.S. vitamin marketers cite imports to be at least partly responsible now—as in previous cases *(CW, Feb. 9, '57, p. 75)*—for the domestic price cuts. Most foreign-made vitamins still sell at significantly lower prices than U.S.-produced materials, despite attempts to keep tabs competitive.

New quotes: vitamins B_1 and B_2 were each reduced $4, to $36/kilo. Vitamin B_6 was marked down to $190/kilo, from the previous $218/kilo. Vitamin E is now selling for $99/kilo.

•

About 18,000 tons of uranium concentrate (U_3O_8), worth more than $300 million, will be produced in the U.S. this year, according to Jesse Johnson of the U.S. Atomic Energy Commission. This, he adds, will be about the level of production through '66.

In '58, more than 5 million tons of uranium ore were mined in western U.S.; the resulting 12,500 tons of concentrate were sold to AEC for about $238 million.

SELECTED PRICE CHANGES—WEEK ENDING FEBRUARY 9, 1959

	Change	New Price
UP		
Copper sulfate, monohydrate, dms., c.l., wks.	$0.004	$0.225
Copper chloride, cuprous, dms., wks.	0.007	0.3925
Potassium stannate, dms., frt. alld. E.	0.004	0.780
Sodium stannate dms., wks. frt. alld. E.	0.005	0.638

All prices per pound unless quantity quoted.

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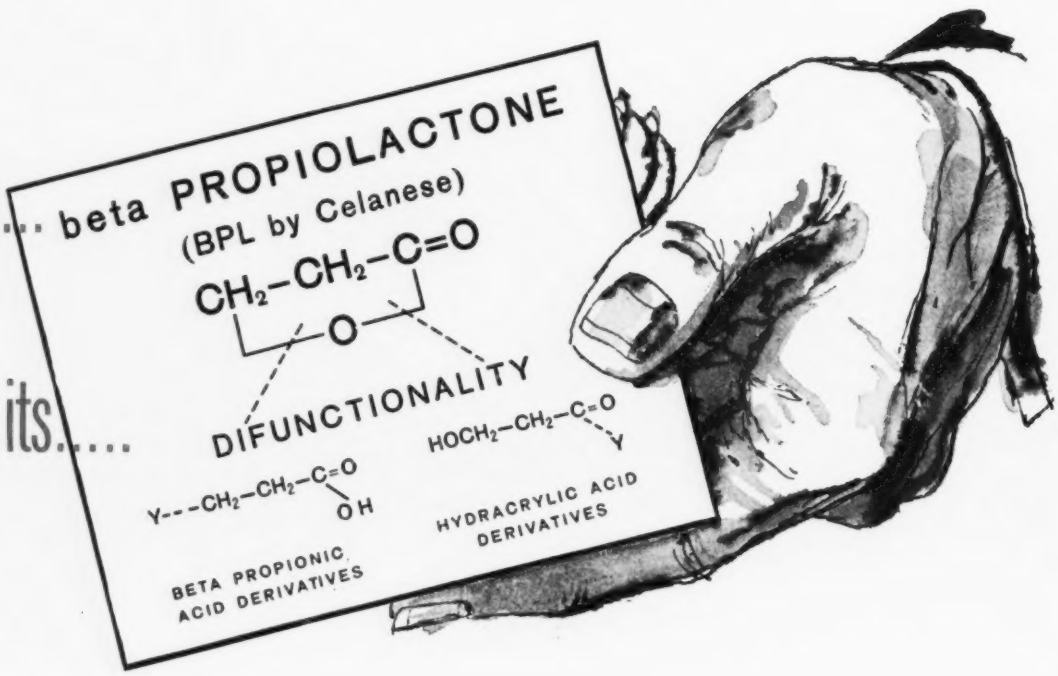

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Refractive index @ 20°C	1.4131
Specific gravity @ 20/20°C	1.1490
Pounds per gallon @ 20°C	9.56
Flash point, Tag open cup, deg. F.	165

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See Chemical Materials Catalog and Chemical Week Buyers' Guide for complete listing of Celanese Chemical Products.

At recent New York boat show, prospect hears virtues of polyester deck; epoxy pitch is next as . . .

Plastics Vie for the Boat Buyer's Budget

The outlines of rough competition between epoxies and polyesters for the reinforced-plastic pleasure-boat market began taking shape last week, in Chicago. Epoxy makers blew up a storm by challenging the long-time domination of plastic boat markets by polyester resins.

Forum for the epoxy campaign kickoff was the 14th annual conference of the Reinforced Plastic Division, Society of the Plastics Industry, at the Edgewater Beach Hotel. The epoxy case was pressed vigorously by Union Carbide Plastics in a key talk to industry delegates — a talk that stirred up spirited informal corridor debate on pros and cons of the two resins in boat making.

At stake is the reinforced-plastics makers' greatest single outlet. In '58, an estimated 37 million lbs. of resin went into boats; that represents a handsome 20% of the industry's record 185-million-lbs. sales. (In comparison, the next largest outlet is the construction industry, which accounted for 17% of total consumption.)

Moreover, the '58 demand—which represents a 44% increase over '57 sales — underscores the striking growth by the industry. In '57, boat manufacture accounted for a relatively small 15% of total reinforced-plastics sales.

The next jump in demand is expected to be just as big—another 44% sales hike that should push the '59 figure to roughly 43 million lbs. And this phenomenal growth will likely continue through the next decade. Current predictions: plastic boats will count for over half the small boat market by the mid-'60s.

Epoxies to Climb Aboard? Right now, reinforced (primarily with glass) polyester resins supply virtually all of the boat market. But a Union Carbide spokesman told *CW* that his firm expects to see epoxies take over more than one-third of those sales within the next five years.

Meanwhile, Union Carbide's Paul Limbach stressed the virtues of epoxies to conference attenders. Cited as advantages: excellent adhesion to glass fibers, high abrasion resistance, low shrinkage, good chemical resistance, fine fatigue strength, and the ability to cure at room temperature. These characteristics, said Limbach, permit construction of boats with low hull shrinkage and warpage, excellent resistance to salt water, greater strength-to-weight ratio, longer life.

Opponents Lower the Boom: Polyester proponents, of course, quickly reacted, pointed out shortcomings of epoxies. Handicaps that have long been responsible for blocking an epoxy sweep into "big time" boat applications include high cost, handling and toxicity problems.

Epoxy resin prices are two to three times higher than polyester prices. Epoxy pot-life (keeping time when mixed with hardening agents) can be extended only with an accompanying increase of cure time. Consequently, either expensive oven-curing or long curing periods must be tolerated; otherwise, long pot-life must be sacrificed. Furthermore, epoxies' critics say, "skin contact or inhala-

tion can be seriously irritating and harmful."

Epoxies Defended: While acknowledging these disadvantages, Limbach stressed recent developments that go a long way toward routing traditional anti-epoxy arguments. For example, a recent 20% epoxy price reduction, from 80¢/lb. to 62¢/lb., narrows the gap between epoxy tabs and the 33¢/lb. cost of polyester resin. The reduction is enough, says Limbach, to permit epoxy systems to fit into the economic picture of both producers and consumers.

But more important, he said, is development of a new epoxy spray gun by A. Gusmer, Inc. (Woodridge, N.J.); it permits continuous mixing and application of epoxy systems, hence whips pot-life and curing problems encountered in batch operations. Boat fabricating costs are thereby cut substantially. Moreover, use of the Gusmer gun, plus proper protective gear, reduces likelihood of skin contact and inhalation of toxic resins and hardeners.

Boat Makers Divided: Commercial substance is added to Limbach's views by at least two pleasure-boat manufacturers. The St. Croix Corp. (Park Falls, Wis.) introduced a new line of 12-16-ft. epoxy boats at the National Sporting Goods Assn. show last week in Chicago. The firm claims its epoxy boats sell at prices competitive with those of polyester boats.

Reports St. Croix Sales Manager William Johnson, "We've already received orders for 800 boats, and we foresee sales of well over 1,500 before the '59 boat season ends."

Meanwhile, Northwest Manfacturing Co. (Iron River, Wis.) is bringing out a line of 12½-ft. epoxy boats that, it says, are made competitive with conventional plastic boats because of the Gusmer fabricating technique.

Says Edward Holloway, Northwest Manufacturing's plant superintendent. "The market for epoxies in marine equipment is now ready to be tapped. Handling probelms have been keeping us away from the epoxies, but after seeing Bakelite epoxy and chopped glass fiber being sprayed into a boat mold by the Gusmer gun we feel that the problems have been solved."

But there is, of course, a powerful block of polyester supporters among makers of plastic boats. The consensus: the epoxies' attempt to crack the boat market will be tough. Chief concern voiced by the doubters bears heavily on the still-too-high price of epoxy resins.

Remarked one boatman, "Sure, with epoxies you get a lighter boat of equal or greater strength than with polyester. And you get a lot of other fine properties, such as long life in rough service and great chemical resistance. But plastic boats are intended for a little pleasure boating on the local lake, not for hauling freight across the Atlantic. So, frankly, I'm not so sure we need all those properties in this business. And I'm dead certain we don't need them if we have to pay double to get them."

In the last 10 years, more than 200,000 reinforced-plastic pleasure boats have been manufactured—most of them since '53. Plastic boats, of course, still represent a minor part of the total pleasure-boat industry—but that share is growing. In '56, for example, 434,000 recreational craft were built; 40,000 of these were plastic boats. Estimate for '60: 100,000 plastic boats (*CW, Feb. 2, '57, p. 80*) in a 600,000 total.

Polyesters have paved the way, demonstrating the existence of a big potential market for plastic boats. It's not surprising, therefore, that makers of competing plastics are eyeing this market with undisguised interest; this is particularly true of epoxy makers, some of whom now have big surplus resin stocks (*CW, Dec. 13, '58, p. 73*).

It's clear that epoxy proponents are churning up some strong arguments in favor of the newer resin; but it's clear, too, that they will need all the promotional push they can muster to break through the impressive tide of opposition.

UPI

Awaiting Spring—in a Plastic Wrapper

Another unexpected market for ubiquitous plastics cropped up when Parisian flower sellers brought a touch of spring to winter-swept city streets by setting up shop in transparent tents. The plastic—polyethylene.

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99+% MgO

Heard the news about *International* magnesium oxide? Highest purity ever achieved in carload quantities . . . purity you'd expect to find only in laboratory-controlled samples. And it's in the low price range!

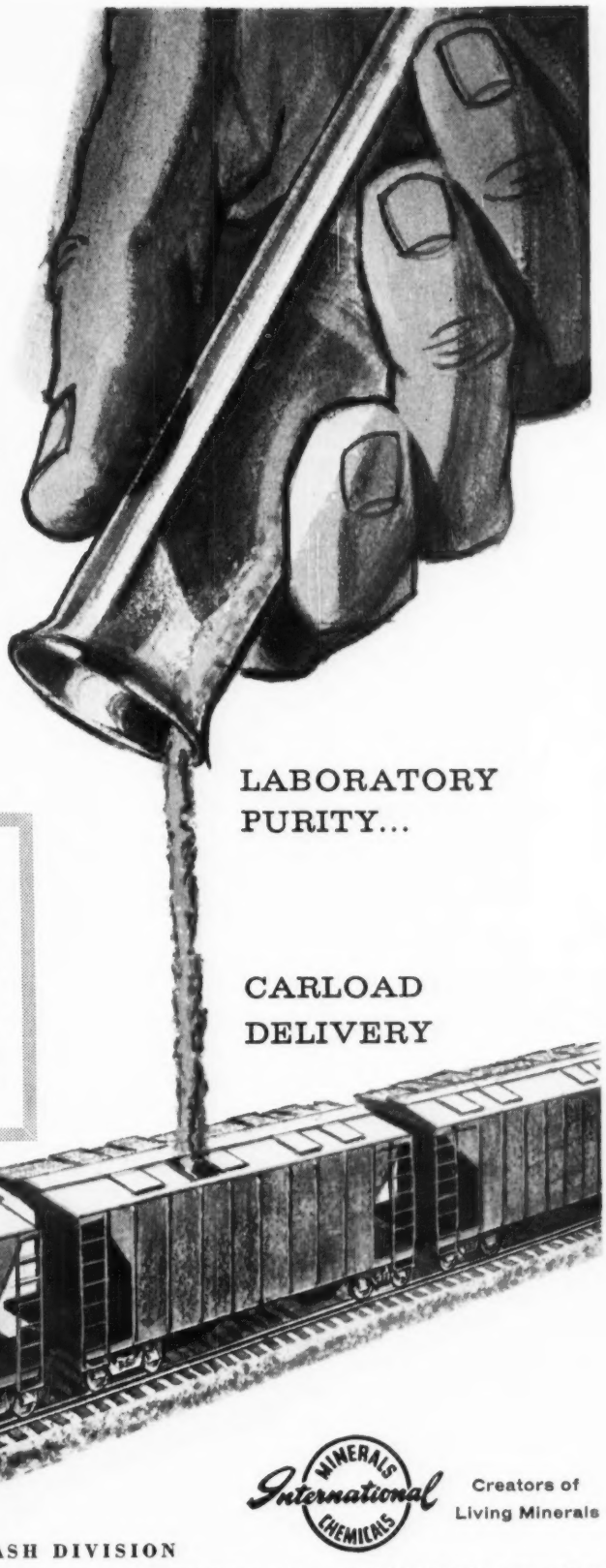
Not to mention wide application. Among its uses: As a stabilizing and vulcanizing agent for rubber . . . in high-grade ceramic and glass formulations . . . for acid neutralization, electrical insulation, uranium ore treatment. It has demonstrated its worth in both high-purity magnesium chemicals and in low-sulfate, high-magnesium catalysts. What's more, *International* MgO has proved preferable to magnesia produced by conventional methods. And there's still more to come through *International* research.

A test sample of low-iron, low-lime *International* MgO in any of its three forms — powdered, pelletized or granular — is yours for the request. Please do — today.

CHEMICAL SPECIFICATIONS

Chemical		Purity Range
MAGNESIUM OXIDE	MgO	99.40 — 99.70%
IRON	Fe_2O_3	0.03 — 0.06%
LIME	CaO	0.07 — 0.08%
ACID INSOL.*		0.02 — 0.10%
OXIDES**	R_2O_3	0.04 — 0.09%
BORON	B_2O_3	0.0025 — 0.015%
CHLORIDE	Cl	0.015 — 0.06%
SULFATE	SO_4	0.02 — 0.07%
SODIUM AND POTASSIUM	Na-K	0.02 — 0.07%
LOSS ON IGNITION		Nil

*Mainly SiO_2 **Other than Fe_2O_3



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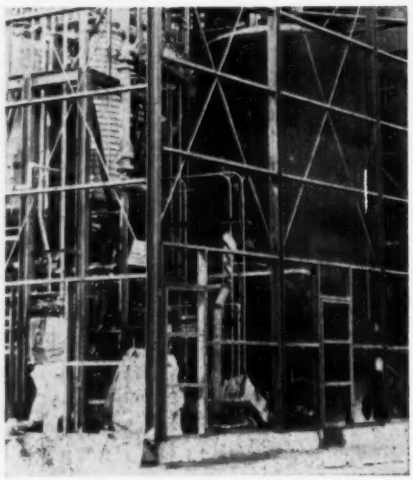


FLUIDICS AT WORK

Glasteel takes the bite out of chlorine dioxide

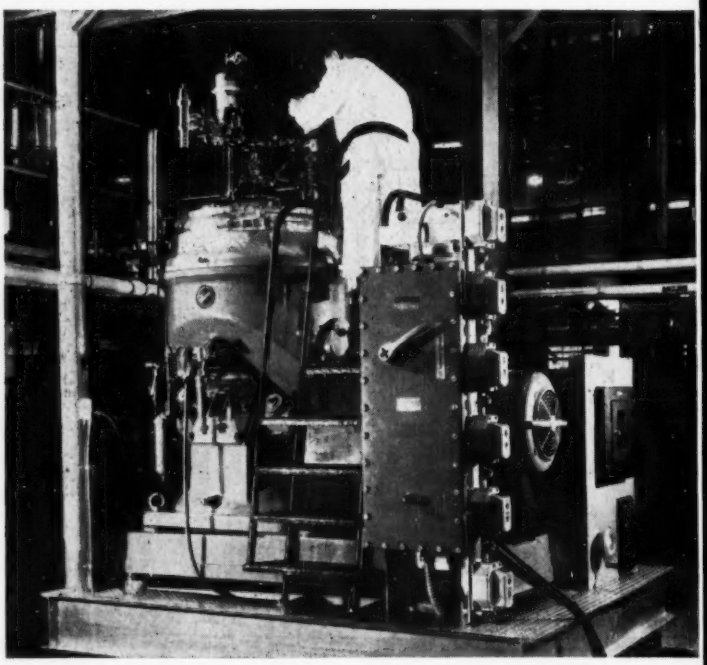
Chlorine dioxide generation is an excellent example of the depth of our FLUIDICS program. Here is a highly corrosive material made from other corrosives in a complex process.

The chemicals commonly used have no corrosive effects whatsoever on Glasteel—sodium chlorate, sulfuric acid, and methanol in the Solvay process; sulfur dioxide, sulfuric acid, and sodium chlorate in the Olin Mathieson process.

An even more important factor here is the sheer versatility of Glasteel. You can use it wherever corrosives are present . . . everywhere from generators to storage tanks to pumps to pipes, fittings, and valves.

More than 25 pulp and paper mills are now using Glasteel equipment from Pfaudler for chlorine dioxide generating processes. And, when they do a complete cost analysis covering original prices, maintenance costs and length of equipment life, they find Glasteel the most economical equipment they can use.

Circling "A" on the coupon will start information on its way to you.



FLUIDICS AT WORK

Now, a packaged centrifuge for inplant production line testing

So that you can test our Titan centrifuge with your own products in your own production line, we've mounted a 6,000 gal./hr. capacity unit on a movable skid that is completely integrated with the required pumps, valves, controls, and other accessories.

All you need is an available 220/440 three-phase electrical service and you're in business.

This first of a series of packaged test units is available on a leasing agreement set to meet your particular needs.

They supplement a test program which has operated for some time now in our Pfaudler labs. They should prove of great value where you have products that are perishable or otherwise difficult to ship or whenever you prefer to do your own inplant testing.

We will also provide technical personnel for setting up and operating the test program.

An outstanding feature of these centrifuges is their ability to desludge themselves automatically. In normal operation you can run them continuously for weeks without a major shutdown for cleaning.

For more information on the centrifuge line, circle "B" on the coupon. For information on the leasing program, see your local Pfaudler Permutit representative.

DICS

is a Pfaudler Permutit program providing the know-how the equipment and the experience for solving problems involving fluids

FLUIDICS covers such varied phases of fluid handling and control as:

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reactions
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metering
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piping
storing
centrifuging
filling
heat transfer, etc.

Whenever you have a fluid-handling problem, look to this Pfaudler Permutit FLUIDICS program for the best solution.

75 YEARS CREATING FOR TOMORROW Pfaudler

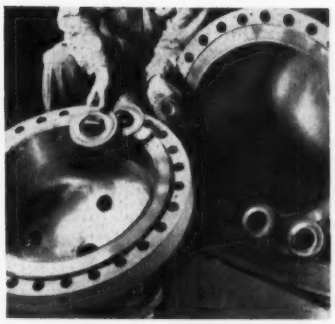
FLUIDICS AT WORK

Permutit SKB resins now basic in ion exchange metallurgy

The first five ion exchange plants for extracting uranium from its ore on a production basis were designed by Pfaudler Permutit engineers. All five of these pioneer ion exchange plants, as well as other Pfaudler Permutit-designed installations in South Africa, Belgian Congo, and Canada, are producing at a high rate of efficiency.

Five out of seven of the top-producing U.S. uranium mills using the resin-in-pulp process are using Permutit SKB ion exchange resin exclusively. This resin has an exceptionally high uranium capacity and gives very efficient recovery under production conditions.

For more information, circle item "C" on the coupon.



FLUIDICS AT WORK

First tantalum reactor of production capacity

This 30-gallon reactor has its complete interior protected against corrosion by tantalum. It's the very first reactor of this size with full tantalum liner—designed for 500 psi at 650°F.

The unit consists of a stainless steel shell with a fabricated tantalum liner. Special welding techniques and equipment have been developed at Pfaudler for welding tantalum in the absence of air.

Several more large vessels of tantalum are now in production—signal proof of the fact that you can now add this metal to Pfaudler's comprehensive list of corrosion-resistant construction materials.

For more details, circle "D" in the coupon.

PFAUDLER PERMUTIT INC. Pfaudler Div., Dept. CW-29, Rochester 3, N. Y.

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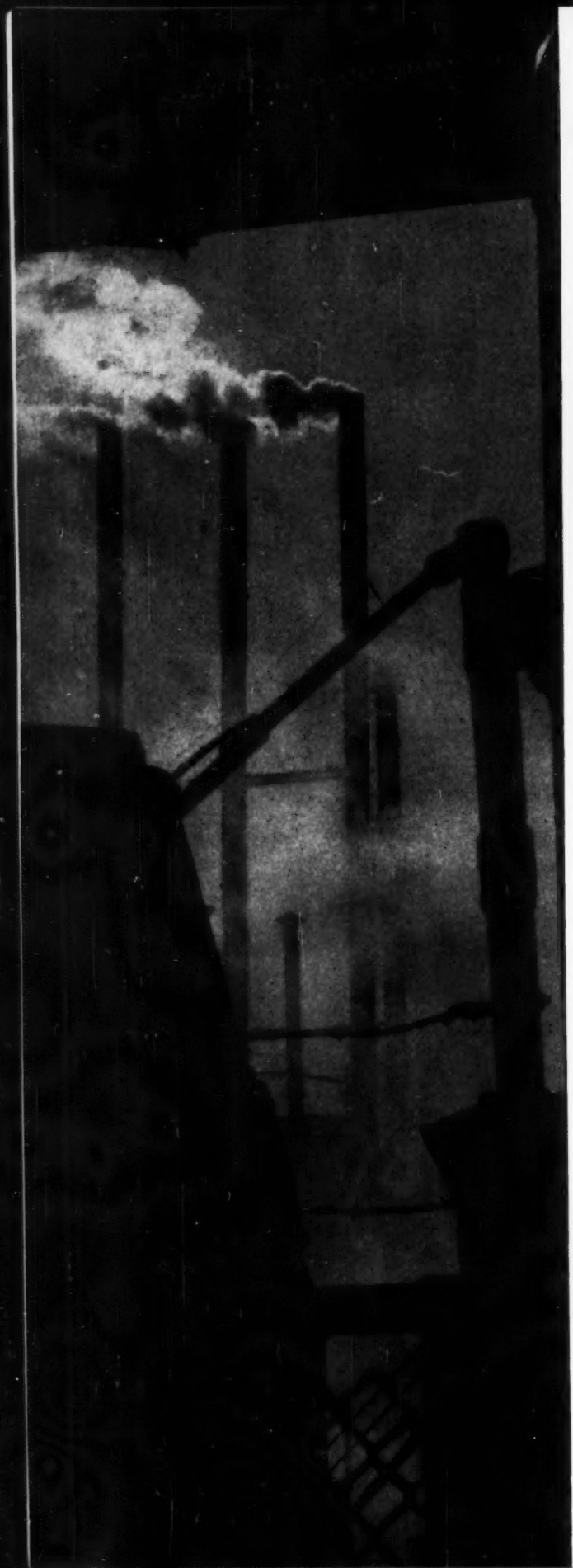
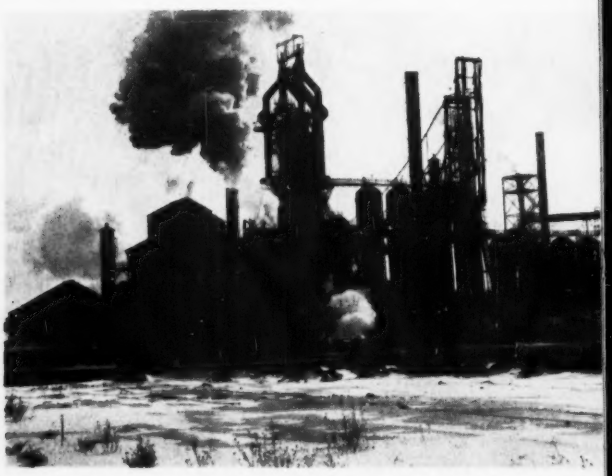


Chicago's belching stacks spawned tough, new law.



Factories Smoke from processes and equipment must meet emission, density limits.

Pollution Law Touches All Bases

Open Fires Open refuse-burning prohibited, except with special city permission.

C.W. PHOTOS—MERRILL PALMER

Auto Exhausts Excessive or unreasonable smoke from any internal combustion engine is prohibited by the ordinance, which provides for fines of $50-200 for repeat violations.

Federal, state and local campaigns against air pollution are being intensified at a record rate, and the chemical process industries are a prime target. Last week, CPI executives in Chicago examined one campaign's result, which may well serve as a model for other state and local regulations certain to be enacted this year. It's a new air-pollution control ordinance that puts muscle into Chicago's efforts to eliminate a steadily worsening problem.

Chief significance of the new law: its thoroughness. Supporters call it the "most complete air-pollution ordinance ever drafted."

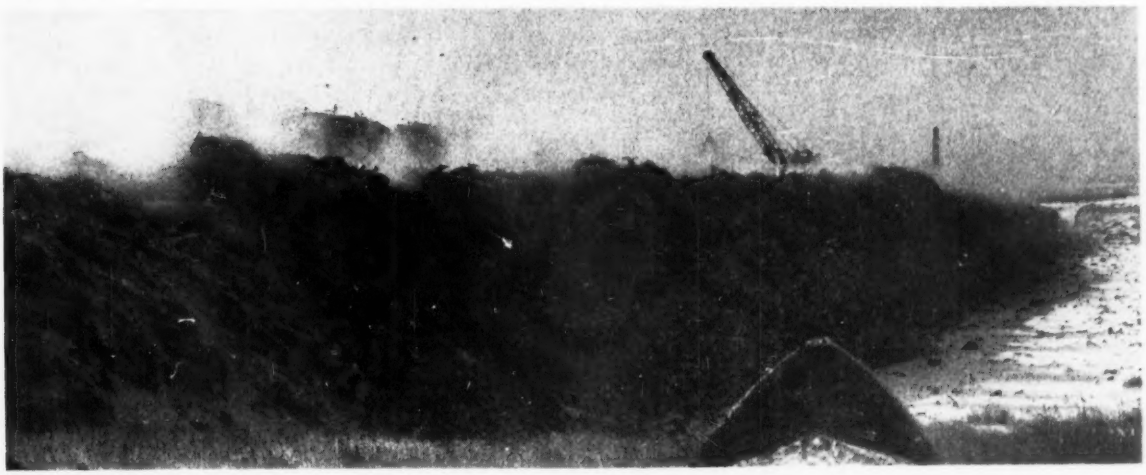
- It calls for a full-time director of air-pollution control, a nine-member air-pollution control committee, a seven-member advisory board of engineers and a seven-man appeals board. It also clamps down on offenders by imposing fines of $50-200 for repeat violations. Under the old law, fines for violations were $10-200, regardless of how often the offense occurred.
- It regulates (*see photos*) all industrial processing and fuel-burning equipment, reduces tolerable allowances for smoke emission, sets new standards for existing heating plants and industrial furnaces.

Industrial Comments: The measure represents three years of effort by antipollution forces in close cooperation with industry representatives. Despite its stringent provisions, it has been well received.

Generally, CPI management men tell *CW* they are favorably inclined toward the measure, only a few express doubts about its effectiveness, say they expect no changes in production procedures, since "most of the companies have already made the changes now required."

Not all Chicago businessmen welcomed the ordinance. Said a spokesman for the Central Motor Freight Assn. and several oil interests, "Vague phraseology concerning exhaust fumes from motor vehicles might lead to

Open Storage Handling, storing or discarding of slag, cinders, dust or other process wastes likely to become windborne must be done with reasonable precaution to limit air pollution.



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harassment of diesel truck drivers."

And, from a representative of the Lake Carriers Assn.: "Requirements might deter Lake ships from docking at Chicago."

Pressures Mounting: Meanwhile, pressures are mounting on all levels of government and within civic groups for more effective control of air pollutants.

These pressures are finding expression in regional and national meetings, such as the last November's first National Conference on Air Pollution, urged by U.S. Surgeon General Leroy E. Burney. At that session, 900 industrial and government officials discussed long-range plans at all levels. One area of agreement: strict regulations. And they'll get stricter faster than previously expected.

To date, the federal government has spent some $12.1 million on air-pollution research, has $4.2 million more budgeted for the next fiscal year.

One possible outcome of federal efforts in this area: federal control over interstate air-pollution problems. Said Health, Education & Welfare Secretary Arthur Flemming, "Where interstate problems are involved, I believe consideration should be given to strengthening federal law by authorizing the federal government to hold hearings and to make findings and recommendations."

States Take Lead: But, for the present, at the center of the sources of pressures for better air-pollution control stand the states themselves. In nearly every major industrial state, new regulations have been proposed or are being considered, or steps are being taken to provide stricter enforcement. Some key examples:

- In California, a bill has been introduced in the state legislature to block the sale of automobiles whose exhausts give off contaminants in excess of standards proposed by the law. In addition, Gov. Edmund Brown has asked for appropriation of "adequate" funds for combating air pollution from all sources.
- New York state and Buffalo city officials have called for a detailed survey of Erie County's air-pollution problem, termed it the first quantitative estimate of air pollution in the state.
- In Pennsylvania, Allegheny County commissioners met recently to discuss ways of establishing a more efficient antismoke program. They hope to merge two agencies now administering separate smoke control programs in the county.
- Tennessee's state Dept. of Health has a bill before the legislature that would create an air-pollution agency to provide technical assistance to local areas. The bill incorporates some of the Tennessee Manufacturers Assn.'s suggestions on establishing control procedures.
- The Texas state health department also has submitted a control bill to the legislature. It would set up a nine-member state air-pollution control commission, take away local enforcement of pollution laws.

Companies Take Stands: Focal point of governmental and civic antipollution pressures is industry itself, CPI firms in particular.

Now aware of this, process companies are beginning to turn their attentions toward better informing government and the public on the facts of air pollution and industry's efforts to control it. A recent example: the plan by the Chicago Area Drug & Chemical Industries Activities Committee (*CW, Feb. 7, p. 88*). The committee, composed of top-level executives from local concerns, will attempt to apply the informational techniques of Chemical Progress Week on a year-round basis. The committee was formed after a survey showed Chicagoans rated the chemical industry last among four major industries they would like to have settle in the area. The chemical industry's poor standing apparently stemmed from pollution wrangles.

Another example of company action: Chicago-based Sherwin-Williams Co. for the first time is giving its employees and stockholders the details of its 10-year, $251,857 fight to control air pollution.

In the face of increased research on the correlation between air pollutants and respiratory diseases and growing public awareness of pollution's dangers, stricter antipollution legislation is inevitable. But CPI management can have a hand in developing that legislation by cooperating closely with lawmakers, educating the public to the job that industry is doing (e.g., $300 million has been spent so far on applying various pollution-control techniques).

EYES SHARP! Too good to miss. Better budget now for that advertising eyeful—the Chemical Week BUYERS' GUIDE. Don't flirt with the Chemical Process Industries next year—step right up and sell!

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CHEMICAL WEEK—1959

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ADMINISTRATION

LEGAL

Chemetron-Catalysts Suit: Chemetron Corp.'s complaint against Catalysts and Chemicals (Louisville, Ky.) for threatened disclosure of trade secrets has been settled. Catalysts and Chemicals has agreed, among other things, to inform certain European manufacturers that the offers it was alleged to have made were not intended to include the divulging of catalysts trade secrets and confidential information prohibited by a March '58 agreement between the firms.

LABOR

First Contract: The first labor contract covering employees of Kentucky Color & Chemical Co.'s plant in Louisville, Ky., has been signed. The employees are members of Local 633, International Chemical Workers Union. The one-year contract covers 81 workers, calls for a 12¢/hour wage increase, a union shop, dues checkoff, seven paid holidays, more vacation.

•

Glass Settlement: Corning Glass Works (Harrodsburg, Ky.) has settled with 240 production and maintenance employees of Local 1016, American Flint Glass Workers Union, for a wage increase of 5¢/hour or 2¼% of current wages, whichever is greater. Agreement is retroactive to Dec. 1, '58, runs for two years.

•

RTW Bolster: A South Carolina legislator has proposed four bills that would bolster that state's current right-to-work legislation. The bills would permit workers to withdraw union membership at any time, permit union members to terminate the checkoff of union dues by their employer on written request, prohibit selection of union convention delegates without secret ballot, and permit non-union members to vote on strikes in plants where they work.

•

Oil Strike: Only major refinery to be hit by the threatened industry-wide oil strike is Gulf Oil's Port Arthur, Tex., refinery. Members of Oil, Chemical & Atomic Workers Union there are on strike over craft issues; with settlement of those, OCAW would probably go along with Gulf's 5% wage increase offer that matches settlements elsewhere.

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Career Executive (Pharmaceuticals - Vitamins) Small, aggressive, well-established National Company seeks qualified man for Manager of Sales and Branch Operations (Los Angeles). Rounded experience in pharmaceuticals and vitamins and chemical education background required—minimum Bachelor's, but prefer Master's Degree. Excellent salary and conditions. Headquarters located near best residential areas in Metropolitan Los Angeles. Send resume of experience and qualifications to: Mr. Wm. T. Thompson, Wm. T. Thompson Company, 2727 Hyperion Avenue, Los Angeles 27, California.

Assistant Sales Manager—We are seeking a man with broad experience in industrial sales and sales administration, preferably in the food or pharmaceutical industries, with college degree in chemistry, chemical engineering or food technology. Position is with a technical division of national food manufacturing company. Division headquarters are located in New England. Company provides an excellent program of insurance, retirement, and related benefits. This is an opportunity to join an expanding division with excellent growth potential for the person selected. All replies will be treated with the strictest confidence. P-9885, Chemical Week.

Chemical Engineer—Graduate Chemical Engineer wanted for heading Process Engineering Department with old established Los Angeles processing equipment manufacturer. Experience in drying, dewatering or heat transfer desirable. Exceptional opportunity with a leading, expanding manufacturer. P-9854, Chemical Week.

Chemical Sales: Growing Chemical Division of large company needs man to assume responsibility in Sales, leading to position as Regional Manager in a short time. Experience a must. Please submit resumé to P-9878, Chemical Week.

Philadelphia area chemical specialty manufacturer seeks graduate analytical chemist for non-routine analytical work. P-9974, Chemical Week.

Wanted: Experienced production man with sales possibilities thoroughly familiar with polyurethane foam, preferably with chemical engineering background. Give details in education, experience and current employment with references. Applications kept in confidence if requested. P-9973, Chemical Week.

SELLING OPPORTUNITIES AVAILABLE

Complete Line Of Corrosion Proof Materials and construction services including acid and alkali proof cements, brick, linings, coatings, plastic ventilation and process equipment. This is a major line and requires technically trained agents who can devote a substantial portion of their time selling to industry and architect engineers. Several protective territories available in East, South and Midwest. RW-9807, Chemical Week.

Sales Trainee—Midwestern chemical manufacturer has opening for recent college graduate with a B.S. degree in Chemistry or Chemical Engineering. Some technical sales experience helpful but not required. Must be willing to relocate after training period. Age 22-26. Salary depends upon qualifications. Inquiries will be held in strictest confidence. Mail complete resume of qualifications including recent photograph to: SW-9948 Chemical Week.

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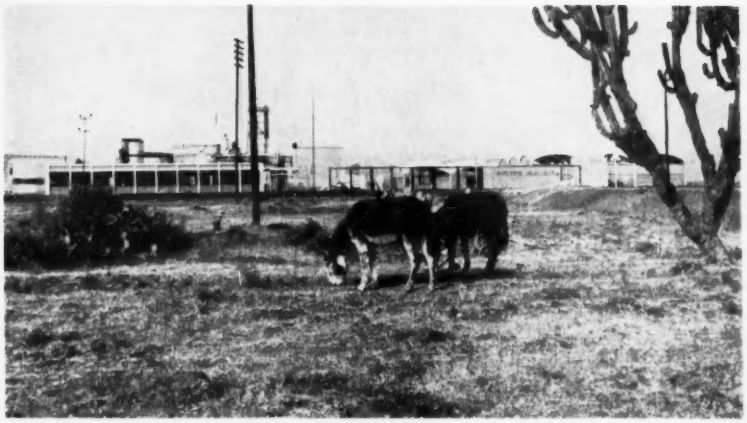

CW PHOTO

Montrose Mexicana: Interest is as an investment, not managerial.

How to Succeed in Mexico

Take it from Montrose International President Pincus Rothberg: if you are going to do business in Mexico, you had better plan on doing things the Mexican way. Rothberg—who has just witnessed the startup of Montrose Mexicana S.A.'s new, $15-million-lbs./year DDT plant near Salamanca—speaks from eight years of experience.

Montrose International is a jointly owned subsidiary of Montrose Chemical Co. and Stauffer Chemical Co. and a one-third owner of Montrose Mexicana.

Rothberg admonishes U.S. processors that "if you enter the Mexican economy, you should make up your mind that, first, it will be a Mexican company and, second, your interest will not be managerial, will instead be solely as an investment."

Rothberg's statement succinctly expresses the conclusion many businessmen have been reaching in their dealings in Mexico. But Rothberg contends that not all have taken the action needed to divorce themselves managerially from such ventures. "Some companies," he says, "still seem to have the notion they can dictate their terms to the Mexicans."

Montrose Pattern: Rothberg first started looking into Mexico as a production point for DDT in '51, but it wasn't until '56 that market estimates showed a plant could be supported. Since then Montrose has been working out financial and engineering arrangements—carefully cooperating with Mexican nationals. Rothberg says, "You've got to make every effort to cooperate. The feeling of nationalism isn't a political or economic institution—it's social. It stems from times when Mexicans were not well-treated by Americans. For that reason, for example, you can't afford to even suggest turning to the U.S. government for help. It's far better to deal with Mexicans and let them do the problem-solving."

Montrose Mexicana follows patterns that have been used elsewhere. The firm's ownership is distributed between Montrose International, which put up 33⅓% of the $2-million capital; Nacional Financieri de Mexico, a state-owned investment agency, which has 20% interest; and private investors, who own the remainder of interest. In addition, French banking sources have loaned the firm $3,300,000, which is guaranteed by Nacional Financieri. The arrangement, Rothberg says, is indicative of the plenteousness of Mexican capital resources. And, management is in the hands of Mexicans.

Rothberg makes this point of encouragement to American investors: the talked-about Mexican government red tape is easier to cut than it first seems. This is because, he says, many of the multitude of regulations give wide discretion to local officials. Thus, most barriers to investment in Mexico can be hurdled by courteous and persistent cooperation officially and socially, particularly at local levels.

Tracers

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Pilot Unit, SS., 30 gal. comp. package, elect. heated. FS-9820, Chemical Week.

Presses, 2 Shriver 36" closed delivery 29" chamber Plate & Frame. FS-9824, Chemical Week.

Pipe, 5,000 ft. 3" Type 430 Stainless Steel, Like New. 500 cu. ft. New 1¼" x 1¼" x 3/16" Clay Rasching Rings. 700 cu. ft. New 1¼" x 1¼" x ¼" Porcelain Rasching Rings. Carry large stock of Pipe, Stainless Steel and Ammonia Fittings, Lead Valves, All New, Priced to sell. Carl Nussbaum, Jr., 9907 Preston Highway, Ph: Spring 6-0071, Louisville 19, Ky.

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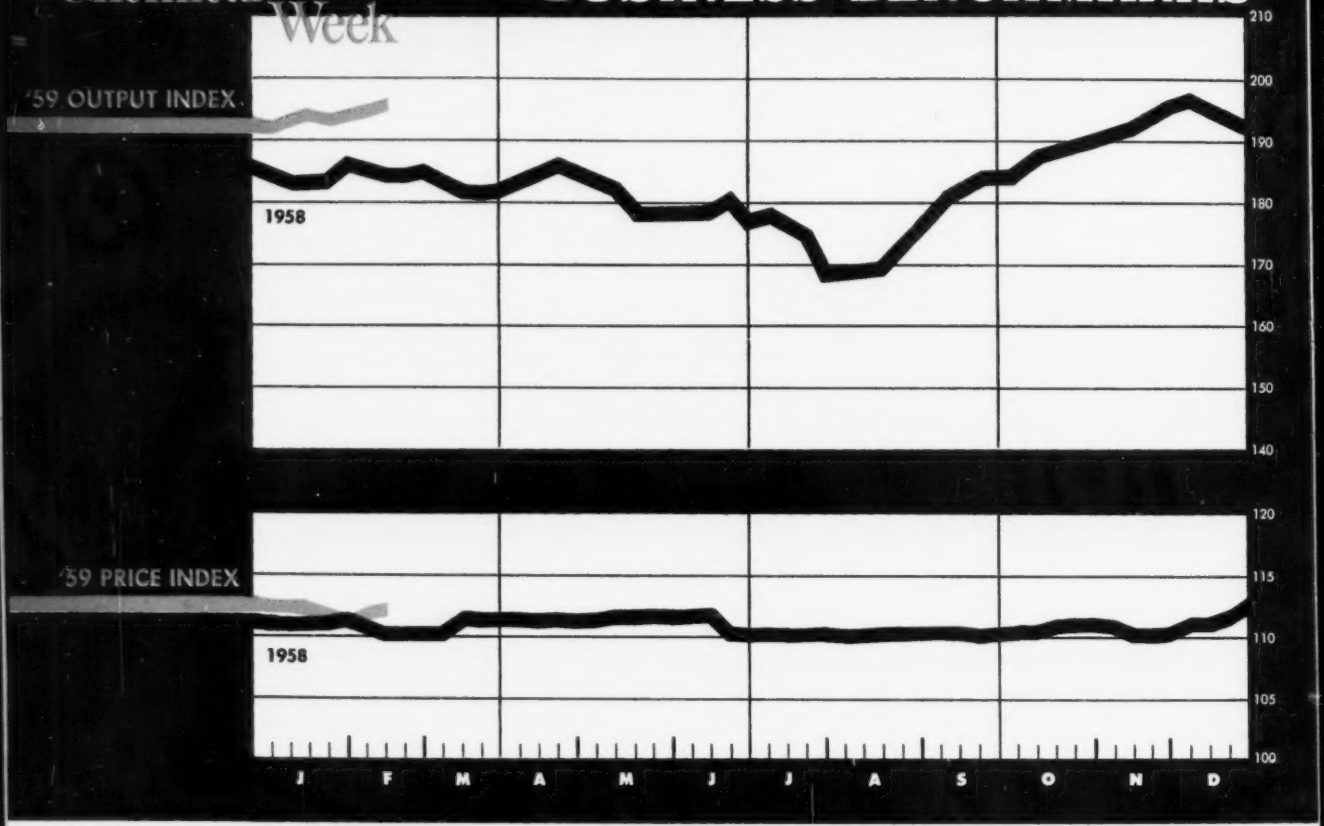
This Tracer Section can be used whenever you are looking for or offering Equipment, Plants, Supplies, Chemicals, Opportunities, Special Services. The rates are low—just call or write Classified Advertising Division, Chemical Week, P.O. Box 12, N. Y. 36, N. Y., LOngacre 4-3000.

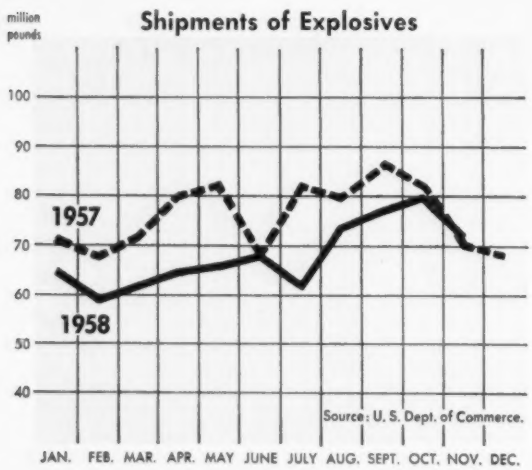
Chemical Week

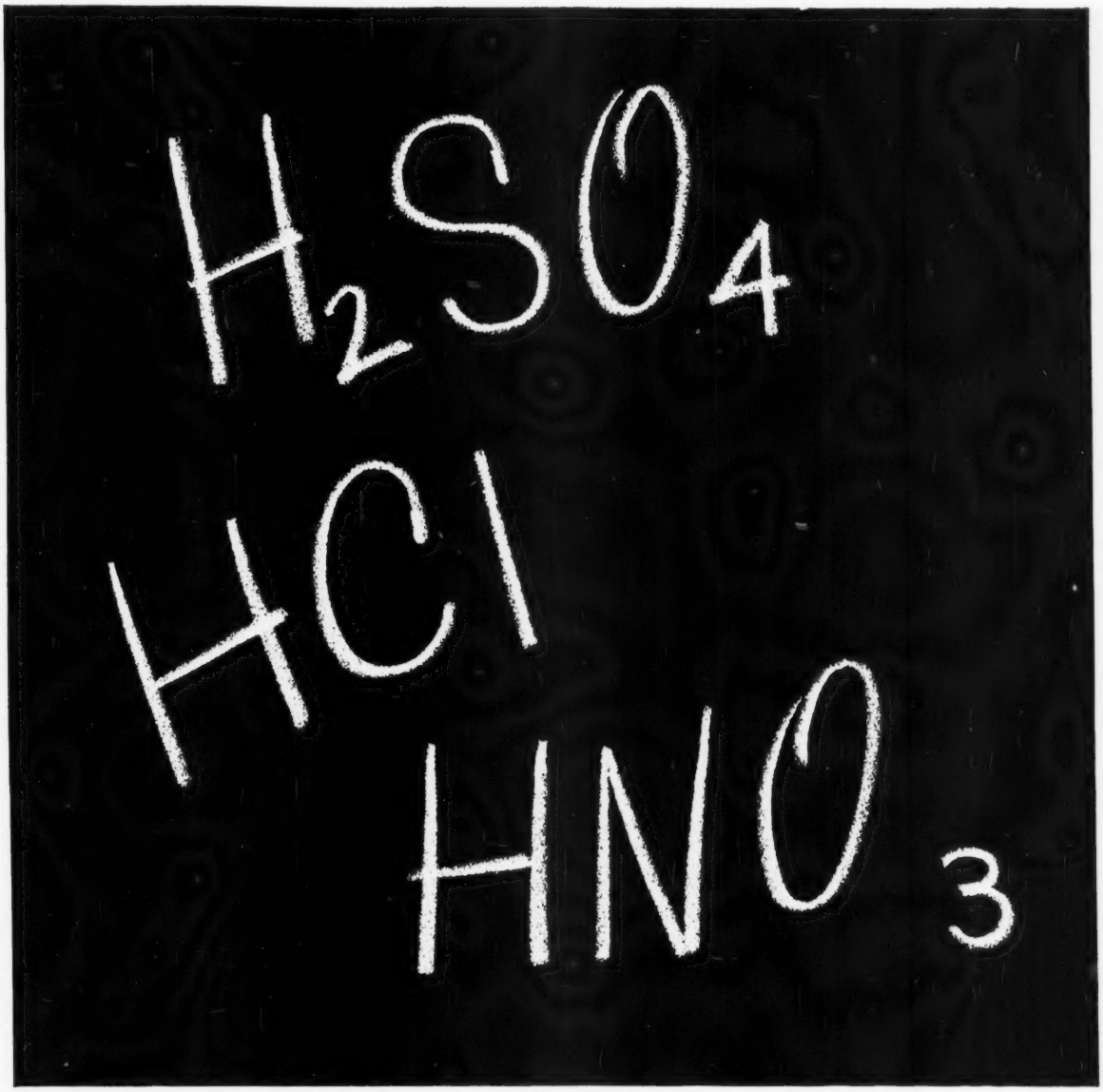
BUSINESS BENCHMARKS



FEBRUARY 14, 1959

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	196.0	194.5	185.5
Chemical Week wholesale price index (1947=100)	111.8	111.0	110.8
Stock price index (11 firms, Standard & Poor's)	49.06	49.36	41.43
Steel ingot output (thousand tons)	2,256	2,178	1,457
Electric power (million kilowatt-hours)	13,151	13,394	12,238
MONTHLY INDICATORS—Production	Latest Month	Preceding Month	Year Ago
All manufacturing	140	144	134
Nondurable goods manufacturing	131	138	123
Durable goods manufacturing	153	155	147
Chemicals and allied products	194	194	183
Industrial chemicals	220	215	198
Petroleum and coal products	142	139	138





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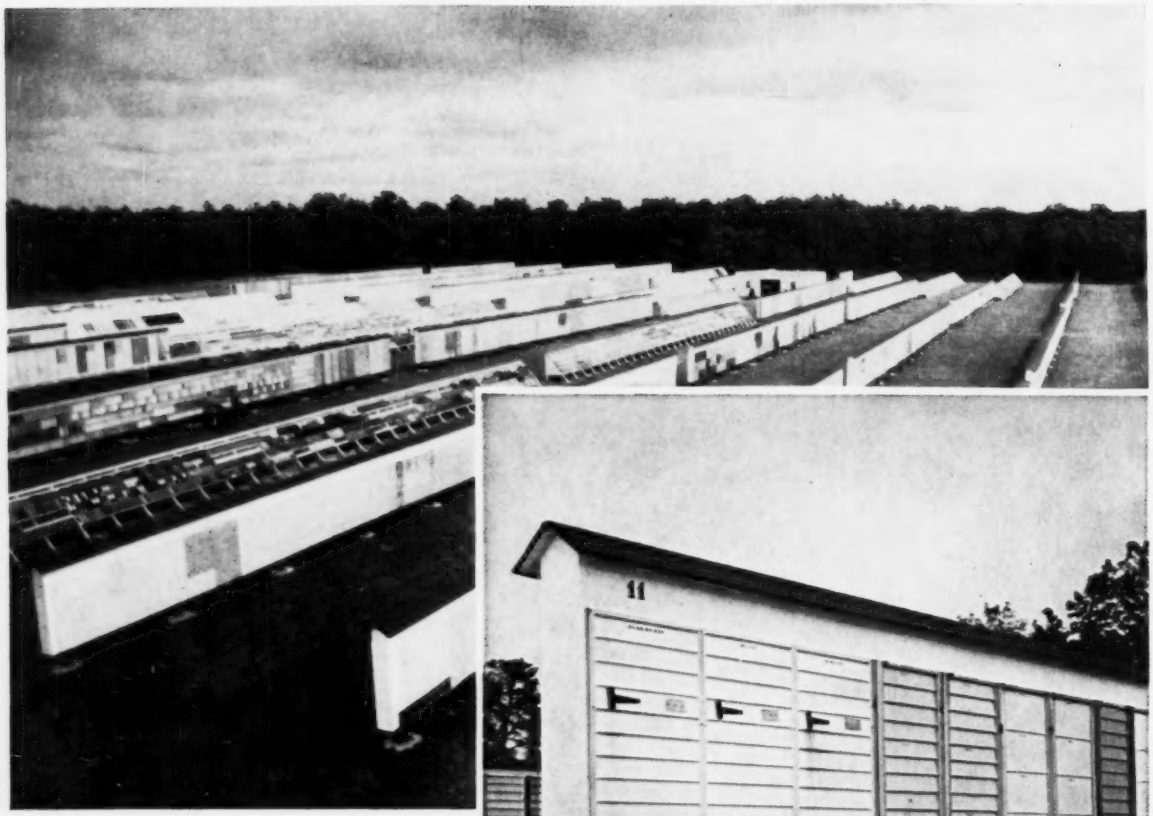

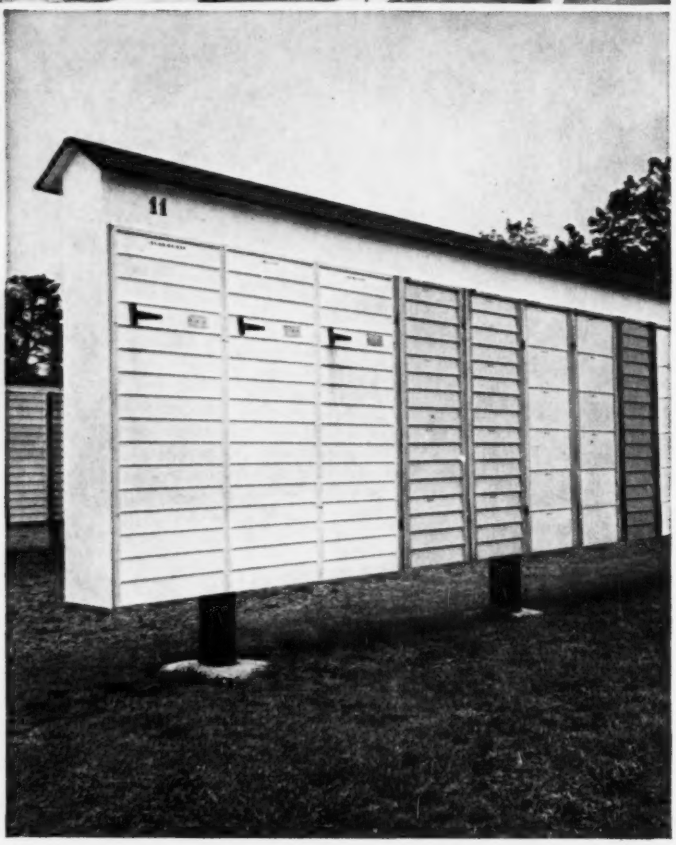

Pigments on combat duty

The fence in the color photograph above is part of the 2½-mile system of test fences (partially shown at top) at Titanium Pigment Corporation's weathering test station at Sayville, Long Island. Here, TITANOX* white titanium pigments go on "combat duty" under actual weather conditions.

This particular fence is testing house paints, with varying combinations of TITANOX pigments and other ingredients, for staining from hardware. You can see that two of the white panels are discolored by stain, while the middle one remains clean. This is typical of the careful testing that characterizes our cooperation with many paint formulators. Test fence studies at Sayville are supplemented by studies at other locations, as well as on actual houses and other structures.

TITANOX white pigments undergo comparable evaluation for use in many other products besides paints: in paper, rubber, plastics, ceramics, inks, leather and roofing granules. Titanium Pigment Corporation, 111 Broadway, NewYork 6, N.Y.; offices and warehouses in principal cities.

TITANOX

TITANIUM PIGMENT CORPORATION

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*TITANOX is a registered trademark for the full line of titanium pigments offered by Titanium Pigment Corporation.

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